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STATUS OF PUBLIC INSTRUCTION IN SAXONY.

SUGGESTIVE FACTS FOR PENNSYLVANIA.

WE translate, with a few changes, from the *Journal de l'Instruction Publique*, Paris, the following interesting account of public education in Saxony. The population of Saxony is now about three millions, and if we compare the state of education in this kingdom with the state of education in Pennsylvania, the lesson must prove a valuable one.

The kingdom of Saxony is, perhaps, in Germany, the state where public instruction is the most richly endowed and the best organized, and without exception it is that which enrolls the largest number of scholars in the public schools in proportion to the population, nineteen to every hundred, or nearly one-fifth. The two principal cities, Dresden and Leipsig, are important seats of learning and culture, and the numerous industrial centres are inhabited by a working population bright and intelligent. It may, perhaps, be interesting to give, upon the actual state of public instruction in this little country, some statistical details. We have before us the official report of the Saxon Minister of Public Instruction, recently published. From it we extract the principal figures.

1. HIGHER INSTRUCTION.

Saxony posesses two establishments for higher instruction: the University of Leipsig and the Polytechnic School at Dresden.

The University of Leipsig is, of all the higher institutions of Germany, that which attracts the largest number of students. There were in attendance during the summer semester of 1878, 2861 students, of whom 1056 were Saxons, and during the winter semester of 1878–9, 3,061 students, of whom 1045 were Saxons. The number of professors and *privat-docenten*—private teachers—was, during the summer, 165, and during the winter 156.

The library of the University possesses 332,000 volumes and 4,217 manuscripts; the reading-room receives 254 journals or scientific reviews, 75 political and 25 literary newspapers. Among the collections of the University there is a numismatic collection, comprehending 85,080 specimens; a zoological museum with 60,500 specimens; a cabinet of minerals with 40,800 specimens, and a herbarium with about 90,000 species of plants. The astronomical observatory is managed by a Director, two observers, and an assistant. The expenses of the University for the year were about $256,921, and the professors were paid about $113,865. Of this the State pays about *two thirds*, the remaining third being mainly derived from the fees of students.

The Polytechnic School at Dresden comprehends six divisions: mechanics, roads and bridges, architecture, chemistry, a higher normal school, and the sciences in general. It had, on the first of December, 1878, 672 students and 43 professors. Its expenses increased for 1877 to $66,156, of which only $9,444 were covered by the revenues of the school, and the Government was compelled to foot the bills for the balance.

2. SECONDARY INSTRUCTION.

Secondary instruction comprehends, according to the law of the 22d of August, 1876, three classes of establishments: Gymnasia, Real Schulen, and the Normal Schools.

The Gymnasia are thirteen in number, including the two schools of Forestry and Agriculture at Meissen and Grimma. Of these thirteen establishments, four belong to the Government, five are placed, in virtue of an agreement to that effect, under the direction of the Minister of Public Instruction, three are under municipal control, and one, the Gymnasium von Vitzthum at Dresden, is a private establishment with its own special administration.

The Gymnasia do not receive pupils below the age of nine years. The course of instruction continues for nine years, and a pupil leaving, after having undergone the final examination, is fully entitled to

admission to the University or to the Polytechnic School. The two schools of Forestry and Agriculture have as yet only six classes instead of nine, as they only admit pupils above the age of thirteen years. These two schools are boarding-schools; on the contrary the eleven Gymnasia proper admit only day scholars, with the exception of the three at Dresden and Leipsig, which receive a small number of boarders.

On the first of December, 1878, the number of pupils in these thirteen establishments was 4,063, and the teaching force consisted of 284 professors. The resources, estimated for the year 1877 at $329,953, are derived from the fees of the students, the revenues from the endowments, the appropriations of municipalities, and a subsidy of the Government amounting in 1877 to $95,574. The Kreuzschule and the Gymnasium von Vitzthum, at Dresden, and the two Gymnasia at Leipsig, do not participate in the liberality of the Government.

The Real Schulen are of two kinds Those of the highest rank have eight classes, and do not admit pupils below the age of ten years. The final examination passed with success gives the right to enter the University or the Polytechnic School. These schools are equivalent to the Gymnasia with the classic studies omitted. Saxony had twelve of them in 1878, with 3,525 students and 239 professors.

The Real Schulen of the second rank also receive pupils at the age of ten years, but have only five classes. At the final examination the students obtain a certificate which gives the bearer a right to substitute for a military service of three years a voluntary service of one year. There are twenty of this class of schools, and the number of students in attendance on the first of December, 1878, was 2,884, with 215 professors. The total expense for the year 1877 was $349,919, of which the Government contributed $81,711.

The Normal Schools, with the exception of the Normal School for lady teachers at Dresden, are boarding-schools, but sometimes the pupils in the two highest classes and also those whose parents reside near the school, or those who desire to board in a respectable private family, can with the consent of the principal live without the establishment.

There are sixteen Normal Schools for masters, fifteen Protestant, and one Catholic, and two for mistresses, without any denominational character.

The Protestant Normal Schools have six classes, or a course of six years, but the Catholic Normal School has only three classes, the pupils remaining for two years in each class. The Normal School for mistresses at Dresden has five classes, and the one at Callnberg four. The Normal School at Grimma has connected with it a department specially designed for candidate-teachers who have passed the customary age for study in school.

Each of the Normal Schools possesses a school-annex or Model School, except the Catholic Normal School, where the practical exercises take place in the Catholic primary school at Bautzen. Three of the Protestant Normal Schools, those at Bautzen, Waldenburg, and the Schul von Hetscher at Dresden, also the Catholic Normal School at Bautzen and the Normal School for mistresses at Callnberg were founded by private parties, but they nevertheless receive the usual Government subsidies. The thirteen other schools belong wholly to the Government.

On the first of December, 1878, the different normal establishments contained 2,414 male student-teachers, of whom 1,922 were boarders, and 186 female student-teachers, of whom 72 were boarders at Callnberg. The teaching force consisted of 239 masters and assistants, and 30 mistresses and assistants. In 1878, 197 male student-teachers and 4 female student-teachers from the Normal Schools passed the examination for a certificate of capacity (*Wahlfähigkeits-Prufüng*). The cost of the Normal Schools for 1877 was $239,158, of which the Government paid $211,517.

There is in addition at Dresden a special school for teaching gymnastics to masters and mistresses. It gave certificates of skill in 1878 to 34 teachers.

To the number of establishments for secondary instruction in the sense of the law of the 22d of August, 1876, there has been added, by a special ministerial decision, the two higher schools for young girls at Dresden and Leipsig. These two schools, whose income is derived from municipal grants and the fees of students, had December 1st, 1878, a total of 754 pupils, all day scholars, and the instruction was given by 25 male and 10 female teachers.

3. PRIMARY INSTRUCTION.

The kingdom of Saxony is divided into twenty-eight departments for the purpose of inspecting primary schools.

The number of primary schools on the first of December, 1878, including the seventeen schools annexed to the Normal Schools, was 2,151. The primary schools in Saxony have a denominational character, there being 2,112 Protestant schools and 36 Catholic schools. These schools are divided into three grades; 1,954 belong to the lowest, 163 to the next, and 34 to the highest. 977 of the primary schools are ecclesiastical schools, (*Kirchschulen*), that is to say, schools dependent upon the parish church. 512 schools possess a place for gymnastic exercises, 86 have a room specially provided for this purpose, and 59 make use of a room belonging to a separate establishment. Different kinds of special institutions are annexed to some of these schools; institutions for orphans to four of them, schools for vicious children to five others, and two have connected with them schools for feeble minded children.

Besides the primary schools properly speaking, Saxony contained at the date mentioned above, 1,866 complementary or finishing schools (*Forbildungs-Schulen*), of which 1,830 were connected with the primary schools of the locality and 36 had an independent existence; eleven of the first and four of the last were designed for young girls. None of these schools are denominational.

The number of pupils in the primary schools was 451,324—222,368 boys and 228,956 girls to which we should add the 1,919 pupils in the seventeen Model Schools, or school-annexes. The pupils in the complementary schools numbered 68,604—67,831 boys and 773 girls. The total number of pupils in the public schools was 521,847, about 19 pupils to every 100 inhabitants. At the same time there were in private primary schools 8,826 pupils.

The pupils in the public schools are divided into 12,358 classes, 9,737 of which belong to the primary schools and 2,621 to the complementary schools. The average number of pupils in a class was about as follows: Primary schools of the lowest grade 48, mean grade 41, highest grade 30, complementary schools 26.

The number of positions for teachers of both sexes was 5,647. The real number of teacher

actually employed on December 1st, 1878, was 5,442, composed as follows: 193 principals of schools, 3,966 masters with 1,115 male assistants, 72 mistresses with 56 female assistants; in all 5,314 men and 128 women. To this statement should be added 80 masters and 1,296 mistresses who teach sewing. Among the masters, 1,462 were charged with additional duties relating to religion.

The whole 5,522 persons engaged in various capacities in the schools receive annual salaries amounting to $2,413,364, to which must be added $47,934 paid to the sewing mistresses. The salary of a principal varies from $450 to $1,165, that of a male teacher from $210 to $900, and that of an assistant from $175 to $405. The average salary of a principal is $787, of a male teacher $463, and an assistant $300. (The salaries of female teachers are not given, but they are much lower)

The number of masters and mistresses receiving pensions was 486. The amount paid out annually in this way is $132,301, giving an average of $272 to each person. Besides, the widows of 855 masters receive in pensions $62,142, or an average of about $72.50 apiece: and 503 orphans $8,444, or about $17 apiece on an average.

Including $6,589 paid for extraordinary and temporary assistance in the schools, the total expense of primary instruction for the year 1877 was $3,481,511, of which the local districts furnished $1,630,630, the Government $359,642, and the remainder accrued from tuition fees and revenues from foundations.

WHAT SHALL WE LEARN?

FRANKLIN HALL.

OUR question does not refer to the education which is imparted to the boys and girls in the school house. The land is dotted here and there with school-houses where the boys and girls of to-day have an opportunity of attending school to become familiar with text-books or scholastic knowledge. But there is an education that every boy and girl must obtain outside of the school-house—in the school of life.

This school opens its sessions at the earliest period of our existence, and continues, without any vacations, while the breath of life lasts. The infant is the first pupil to enter it, and his first teacher is his mother. Few mothers truly appreciate the responsibility of their position. To them a soul is given to train for heaven. The young child's soul is like soft clay; and it takes impressions from the slightest occurrences; the characters engraved upon it must be daily retraced until the clay becomes hardened, so that they can never be erased. The infant studies in these classes when he tries whether the heated stove will burn his fingers, and is taught by painful experience that it will do so. When he cries because he cannot have the razor which lies flashing back the rays of the sun, you may teach him self-government, one of the most important lessons in the school of life. If a child is passionate, teach him by patience and gentle means to curb his temper. If he is greedy, cultivate liberality in him; if he is selfish, promote generosity.

The object of school education is to unfold the faculties of man, to give him the free and full use of his powers It is first to train the intellect, to give him a love of truth, and to instruct him in the process by which it may be acquired. It is to train him to soundness of judgment, to teach him to weigh evidence, and to guard against the common sources of error. It is to give him a thirst for knowledge, which will keep his faculties in action through life. It is to give him that most important means of improvement—self-comprehension. All that we learn at the schools is but the foundation of the superstructure of education which we must build up for ourselves.

There is hardly an instance, in the biographies of the great men of the world, of a man, however highly gifted and richly endowed by nature, who has risen to a conspicuous position, and filled a large space in the public eye, without the most assiduous and diligent devotion to his chosen pursuits. Perseverance is a prime quality in every pursuit, and youth is the time of life to acquire this inestimable habit. Men fail much oftener from want of perseverance than from want of talent and of good disposition; as the race was not to the hare, but to the tortoise, so the meed of success in study is to him who is not in haste, but to him who proceeds with a steady and an even step. We cannot reach any altitude of thought, nor any commanding position, without painstaking, self-denial, determination, and midnight study; and it is of the utmost importance that our boys and girls should fully understand this fact. Nothing great can be accomplished without arduous exertion and a resolute purpose; or, as the American poet expresses it—

> The heights by great men reached and kept
> Were not attained by sudden flight;
> But they, while their companions slept,
> Were toiling upward in the night.

If our boys and girls desire to excel in any one branch of arts, mechanics, manufactures, etc., let them apply their minds to it. In all arts and sciences there are certain fixed principles, which must be known and carefully attended to, if a man wishes to be successful. A mechanic, sometimes, by mere dint of habit and knack, becomes very expert; but it is only in some confined instances. Just in

that track he proceeds with certainty, but can not attempt anything else, nor even aim at improvement in what he does. Nay, if he does not understand the principles on which his operations depend he must sometimes fail; he is confounded by any new appearance, and knows not how to obviate the least difficulty. But if his knowledge precedes his activity, if he understands why things must so be done, and how the effect is produced, he becomes more adroit in his operations; he can remedy any mistake, can rectify any imperfection, can venture even beyond his accustomed limits, to improvements or new inventions.

The world is full of slip-shod business men, who, knowing but little of their occupations, are never able to do first-class work in them. There was great utility in those laws of several ancient States, which made obligatory the instruction of every boy in some honest trade or calling. Work, in some form, is the foreordained lot of all men; and this is not a cause or penalty, but a wise provision alike for happiness and respectability. But many a rich man, in looking at a trade through a false pride, refrains from giving his sons good trades. Riches notoriously take to themselves wings and fly away. Society is everywhere strewn with the wrecks of young men, sons of persons in competent or affluent circumstances, habituated by a style of living and expenditure equal to the whole estate, and which, upon division among the heirs, proves an inadequate maintenance. They take on habits of ease and luxury which acquire the force of nature; fail to comprehend the value of money by earning it, and swiftly or slowly descend to hang as pests upon the skirts of the community.

We know doctors and lawyers who are not ornaments to their professions—who have never learned their trade. They thought the practice of medicine or of law a fine thing, but have learned that they cannot lift themselves by "pulling at their boot straps" any more than the theorist could propel his boat by fixing a bellows to act upon the sail, that he might be able, at any time, to have a fair wind. He found that, with all his blowing, he could not move the boat an inch.

Our children must learn their own possibilities, their relations to the objects around them, and what sphere of life is best adapted to their abilities. Every youth should be educated for a particular purpose and in a particular manner, which should be determined by his natural capacities and the object he has in life.

The learning how to fit ourselves to our surroundings, and not to attempt impossibilities, is one of the secrets of life. Were such lessons taught at our schools, we should not see so many failures in the business of life, so many disastrous shipwrecks which engulf the happiness and comfort of hundreds and thousands of men, women and children.

Young people are frequently enthusiastic, and cannot stop to consider the final results of their actions. Every man must patiently abide his time. He must wait, not in listless idleness, not in useless pastime, not in querulous dejection; but in constant, steady fulfilling and accomplishing his task, that when the occasion comes he may be equal to it. The talent of success is nothing more than doing what you can do well, without a thought of fame.

Our girls should also learn their various abilities and possibilities. The time when woman was treated as a puppet or a drudge —when she was considered a fit ornament for the parlor or a useful piece of furniture for the kitchen—is a thing of the past. If there is a taste for music in your daughter, give her ample opportunity for developing it. Has she a taste for drawing and painting? By all means allow her to practice, and, if possible, make herself perfect. It is far better for our daughters to be good dressmakers than poor painters—mere daubers on paper and canvas. It is far better that they should know how to serve a tempting breakfast and a toothsome dinner, than how to play a few tunes on the piano most execrably.

Every boy and girl *can* become well versed and thorough in some one or more branches of occupation, arts or sciences; but they must learn *thoroughly*. Costly apparatus and splendid cabinets have no magical powers to make scholars. In all circumstances, a man is, under God, the maker of his own mind. The Creator has so constituted the human intellect that it can grow only by its own action, and by its own action it will most certainly and necessarily grow. Every man must, therefore, in an important sense, educate himself. His book and teacher are but helps; the work is his. A man is not educated until he has the ability to summon, as an act of emergency, all his mental powers in vigorous exercise to effect his proposed object It is not the man that has seen most or read most that can do this; such an one is in danger of being borne down, like a beast of burden, by an over-loaded mass of other men's thoughts. Nor is it he who could boast that, of all the warriors at the siege of Troy, he had the

pre-eminence because nature gave him staength, and he carried the largest bow. This man was not great until self-discipline had taught him how to use that strength in bending his bow.

SOMETHING OF THE SEED.*

J. P. MCCASKEY.

"AND *God said, Let the earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit after his kind, whose seed is in itself upon the earth; and it was so.*

"*And the earth brought forth grass and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind; and God saw that it was good.*

"*And the evening and the morning were the third day.*"

The "third day"—before the light of sun, or moon, or stars had penetrated the dense atmosphere of our earth, the earliest vegetable growth was created upon it, the conditions of heat and moisture being then very different from what they are now. The fourth act of the grand drama having made clear the atmosphere, through vast stretches of time, the curtain rose upon the fifth, an era of indefinite extent, during whose millions of years earth and air and sea were made to swarm with the animal creation. And last of all came man upon the scene, who, by intelligent observation, study, use of everything he found here, was gradually to acquire "dominion" over all. The record proceeds, closing the First Chapter of Genesis:

"*And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in which is the fruit of a tree yielding seed; to you it shall be for meat.*

"*And to every beast of the earth, and to every fowl of the air, and to everything that creepeth upon the earth, wherein there is life, I have given every green herb for meat; and it was so.*

"*And God saw everything that he had made, and behold it was very good. And the evening and the morning were the sixth day.*"

So much for the order of creation as it bears upon our subject, and for the origin of the little seed which, in its immense possibilities as we reflect upon them, becomes a very miracle of wonder.

THE SEED AND THE FRUIT.

The seed is a product so precious that all the energies of the plant are directed towards its elaboration and perfection. It is described as "the embryo with its envelopes, or the ovule having attained maturity," which, in favorable soil and under proper conditions of heat, light, and moisture, will reproduce herb, shrub or tree, identical with that from which it was itself produced.

The distinction between the seed and the fruit is readily and constantly made Webster defines the latter: "Whatever is produced for the enjoyment of man or animals by the process of vegetable growth; that part of plants which contains the seed, especially the juicy, pulpy products of certain plants, covering and including their seeds, as the apple, plum, pear, peach, berries, figs, melons, and others."

Thus far the dictionary. The Botany adds: "The ripened ovary with its contents is the fruit of plants, and whatever adheres to the ovary also becomes part of the fruit." The ovule becomes the seed, its ovary the pericarp; and both together, with the addition of the calyx-tube, constitute the fruit.

Although the fruit is one, the seeds contained within it may be many. The orange, golden apple of the Hesperides, we may take as a unit. Its seeds the average eater rejects as not of the fruit. In this he is wrong, though right enough in regarding them unfit to be eaten. The peach, delighting the eye with its beauty, regaling the sense of smell with its fragrance, and most luscious of all our native fruits, preserves its single seed in a stony cell, "with millions in it"—an infinite possibility of orchards that the wildest fancy of a Delaware peach-grower can never compass! The apple, as fruit in the market, is one thing; the little seed, borne always at its heart, unnoticed and unthought of save to be cast aside as of no value, is another. But in that tiny seed, its powers utilized at their best, are tree and flower, and annually-recurring seed, in an increasing progression for all time beyond anything that arithmetic tells of.

"What Plant We in the Apple-Tree?" asks Whittier in one of his late poems, and he answers the question in a half-dozen pleasant verses. "What plant we in the apple-seed?" would be a question equally suggestive. If God saw fit to bring forth the first apple-tree from a single germ, think for a moment of all the wealth of good cheer and health and blessing to future ages that lay hidden in the delicate embryo and minute cotyledons of that lone precious seed. Weigh it against the silver of Mexico or Nevada, the gold of Ophir, California, or Australia; the diamonds of Golconda, of Brazil, or of South Africa—and that first little seed, in its possibilities, were *worth them all!* Does this

*Lecture before the Plant Club of the Young Men's Christian Association, Lancaster, Pa.

sound like "free reins to fancy?" So be it. We delight in fancy—not that which runs away with fact, but that which *glorifies* the fact.

POSSIBILITIES OF A SEED.

And so, in varying degree, are the infinite possibilities of reproduction in the seed of every herb, and plant, and shrub, and tree, which appears in each of the 125,000 distinct species already recognized throughout the world. In a single acorn are possibilities vast enough to include all the oaks that ever grew or ever will grow, with all the manifold benefits resulting to man from the timber of the oak tree. So of the chestnut, the hickory, the walnut, and others, of which we can always buy many seeds at little cost. We never dream of what we have in a handful of chestnuts or shellbarks. In the little seed of the pine are all the forests of their kind that have ever clothed, with waving green, hillside or mountain, vale or plain, supplying timber for man's needs through all ages of the past, and destined, no doubt, to continue the supply through all coming time.

The little seed! Such are its possibilities. The wildest fancy of the wildest romancer must here fall infinitely short of justice to the sober facts of science. Tennyson addresses the plant:

> Flower in the crannied wall,
> I pluck you out of the crannies;—
> Hold you here, root and all, in my hand,
> Little flower—but if I could understand
> What you are, root and all, and all in all,
> I should know what God and man is.

But back of the plant and the flower stands our seed, and back of the seed that life-energy of which men speculate, but in regard to which, save in its results, the wisest of mortals knows no more than the most ignorant. This secret of life man will doubtless learn, as he continues in another sphere of existence the study of God's infinite plan. Archimedes had unbounded faith in the power of his lever, and vainly asked only a fulcrum on which to place it that he might move the world. The mysterious agency of Life is God's great lever brought to bear upon the animal and the vegetable kingdoms of nature. It asks only the minute embryo of the seed, or the spore of the fern, as its fulcrum, that it, too, may "move the world." Archimedes would have failed to make good his vain glorious boast, had all the conditions he asked been supplied. God never fails.

Without attempting an exhaustive treatment of our subject, for which ability no less than time is wanting, we shall touch briefly a few general heads of more or less interest, including the technology of the seed, its general structure, the manner of its dispersion, its vitality, its abundant product, and its economic uses.

TECHNOLOGY OF THE SEED.

The *placenta* is a copious development of cellular tissue where the edges of the carpellary leaf meet and unite. The *ovule* is borne by the placenta, and is the rudiment of the future seed. It consists of a nucleus and two external coats, the outer of which is the *testa* and the inner the *tegmen*. The base of the nucleus is always united with the base of the internal membrane, and their common base is attached to the testa. The junction of the three forms the *chalaza*. The scar which marks the attachment of the seed with the placenta is called the *hilum*. Through this point alone nourishment is imparted for the perfection of the internal parts of the seed. The chalaza and hilum are identical when the ovule stands upright, but when in any other position they are at different points, and the ridge which connects them is called the *raphe*. The *foramen*, or orifice of the ovule, through which the influence of the pollen is introduced to the nucleus, is a small aperture usually formed by the contraction of the testa and tegmen, the outer and inner coverings of the seed. The position of the foramen, which marks the apex of the ovule, indicates the future position of the radicle of the embryo, the radicle being always next the foramen. Through this orifice, which is also known as the *micropyle*, or "little gate," the young shoot makes its way.

The *seed* is the ovule arrived at maturity. It consists of integuments, albumen, and embryo; a *naked seed* is only found in those rare cases in which the ovule is naked. The seed proceeds from a placenta to which it is attached by what is known as the *funiculus*, which sometimes, as in the case of the Dogwood, becomes extended about the seed into a fleshy body called the *aril* or *arillus*. The mace of the nutmeg is the arillus of that seed. The integuments of the seed are called the *testa*, and include both the tegmen and testa of the ovule. Between the integuments and the embryo of many plants lies a substance called the albumen or perisperm, the nature of which is of great importance. The albumen of grains and grasses is mealy, in some plants it somewhat resembles leather, in others horn, in others it is oily in charac-

ter, as in the poppy, and in still others thin and membranous.

The *embryo* is the organized body that lies within the seed. It is the plant in miniature, and is destined to become a plant similar in all respects to that from which it sprang. It is usually, but not always, solitary in the seed, and comprises cotyledons, radicle, plumule and axis. The *cotyledons* are the undeveloped seed leaves; the *plumule* is a rudimentary leaf, but destined to become the stem; the *radicle*, by germination, becomes the root, and the *axis* is the dividing line between root and stem.

ONE OR MORE SEED-LEAVES.

The seed contains, in one form or another, as has just been said, the miniature plant or tree, with usually a magazine of such food as may be needed to give it a fair "start in the world." The life forces, in some way unexplained and inexplicable, take hold of this embryo under favorable conditions, and from the tiny germ—often so small that the microscope of high power is needed to detect it—plants and trees, vast of size, are built up, cell by cell, whose life-period may embrace years, decades, centuries.

Passing by those plants which are polycotyledonous, that is, with many seed-leaves, as the pines; and acotyledonous, with no true seeds, as the ferns and the mosses; we find most plants and trees with which we are familiar included under the great divisions *monocotyledonous* and *dicotyledonous*, referring always to the number of cotyledons or seed-leaves in the embryo. The former of these, or the monocotyledonous division, embraces the palms, rushes, orchids, lilies, pine-apples, bananas, grasses, grains, Indian corn, etc., all of them endogens or inside-growing plants, whose leaves are almost without exception parallel-veined: The dicotyledonous plants include most of the outside growers, or exogens, those whose leaves are netted-veined. While in the former case there is but a single seed-leaf, here there are two seed-leaves.

In many cases the cotyledons included in the embryo are thick and fleshy, as the chestnut, the beechnut, acorn, almond, peach, pear, apple, squash, pumpkin, bean, pea, and others which might readily be named. In the squash and pumpkin, these cotyledons are carried above the ground by the growing germ, and appear as leaves somewhat developed but never becoming large and vigorous; while in the bean, although rising above the ground, they are soon thrown off by the young plants as of no further use, and apparently too unwieldy to be transformed into ordinary leaves. The cotyledons of the acorn, chestnut, almond, peach and ten thousand other seeds, large and small, are not carried above the ground, but each from its adequate store of proper nourishment, under proper conditions of moisture and sunlight, supplies what is necessary to the growth of the tender plantlet, until it has produced its kind, and a new cycle, "from seed to seed," has been completed.

Could some angel number for us this new cycle, telling us, beyond all doubt or question, how often the cycle from seed to seed in this or that particular plant had been accomplished since the parent seed of all sprouted and grew, what a revelation it would be for the student of plant life! what eons of ages would be presented for his contemplation!

Many plants again have the embryo much more delicate in structure than in the case of those just named, the fruit supply being laid up *around* the embryo, and not within it. This substance is known as the albumen of the seed, the structure of the eggs of animals suggesting this term to the older botanists. It is the albumen which is the mealy portion of the seed, and which forms the principal part of the grain of wheat, rye, corn, oats, etc. Albumen, by the way, abounds chiefly in plants having but one cotyledon.

From these facts it will be seen that seeds may readily be divided into two classes, *albuminous* and *ex-albuminous*. The bean, the apple, and the pear, are conspicuous examples of the latter class, the embryo being large and including everything within the integuments, while the seed of the buttercup has a very minute embryo, and is nearly all albumen, it being, for its size, a storehouse of nourishment. The seeds of the tulip are also albuminous. The embryo of the buttercup needs a good glass for its examination, but even at this stage it shows the rudimentary cotyledons The albumen of the nutmeg, whose cotyledons also are very small, is noted for its peculiar appearance and strong aromatic quality.

DISPERSION OF SEED.

The contrivances for dispersing seeds while they are admirable, are at the same time innumerable. Design is everywhere apparent in the economy of nature, but it is displayed in few directions more strikingly than in the dispersion of seeds. In the structure of the seed-pod and in the appendages of the seed itself, we are at times startled at the simplicity

of the plan and the perfect adaptation of the means to the end. Here the elastic pod casts its seeds to a considerable distance; there the light pappus, as in the case of the dandelion and others of the compound flowers, goes floating through the air, bearing its achenium afar. Some have hairs, or awns, or teeth, by which they attach themselves to whatever comes into contact with them; others are inclosed in a little balloon; still others are winged, as in the familiar maple, pine, and ash. Destitute of these means of dispersion, seeds innumerable must fall about the parent stem and perish.

But these are not the only means of dispersion that have been provided. Linnæus says: "Seeds embark upon rivers which descend the highest mountains, arrive in the midst of plains and upon the coasts of seas. The ocean has thrown even upon the coasts of Norway, borne thither by the Gulf Stream, the nuts of the mahogany and the fruits of the cocoa palm, and the wonderful voyage has been performed without injury to their vital energy."

Animals have their part also to perform. It is said that the Indians believe the squirrel to have planted all the timber in this country. The most effective of all agencies, however, in the general distribution of plants, has been man himself, through the avenues of commerce.

SIZE OF SEEDS, THEIR VITALITY, ETC.

As to the *size* of seeds, this varies from the cocoanut, the pride of the palm, to such as are so small that they resemble fine dust.

As to their *vitality*, sometimes it is soon lost, but in many cases it may be retained for a very long time. It has been frequently observed that when trenches have been dug, or the ground from several feet below the surface has been exposed to the sunlight and the rain, new species of plants, not before known in the locality, have sprung up, showing marvelous longevity in the vital principle of the seeds.

Dr. Lindley, the botanist, tells of raspberry seeds found in a Celtic tomb, which germinated 1700 years after the plant had perished which matured them. Raspberry seeds have been taken out of jam, after it has been boiled, which grew when sown in the earth. All seeds have not this power. Those containing albumen would be destroyed by boiling, and of course could not sprout aftewards. Seeds of heliotrope found in a Roman tomb of the second or third century of the Christian era have borne fruit. We have all heard of some grains of wheat found in a mummy-case, supposed to have been more than 2000 years old. The story goes that they were taken to England and planted, where they sprouted, and produced an abundant yield of the branching kind of wheat common in Egypt.

As to the age attained by plants that grow from seeds: Some live a few weeks; annuals one season, dying of old age as soon as the new seeds are ripened; some are biennials, as the beet and the cabbage; others again survive for still longer periods, until we reach the trees, certain of which retain their vitality for centuries. The olive may attain the age of 300 years, the English oak 600 years, the chestnut has been known to live 900 years; individual cedars of Lebanon have been described by travelers for the past three hundred years, since 1575, at which date the largest grove consisted of twenty-four trees; the giant pines of California are rated at more than 2000 years, and the banyans of India are supposed to attain still greater age.

SEED PRODUCTION.

The number of seeds in different plants varies immensely. Some have a single seed, as the peach, and stone fruits generally; others have two seeds, others three, four, five, and from this to thousands. A stalk of Indian corn is said to have produced in a single season 2,000 seeds. A single thistle, it is estimated, may produce 24,000, and if each of these should do as well as the parent seed, the second year would see 576,000,000 matured! The poppy is said to produce 30,000 in a single head.

The botanist Ray estimated the number of seeds from a single tobacco plant at 300,000, while the elm-tree may produce half a million. Yet these seem unproductive when compared with the number enclosed in the capsules of the moss or in the leaves of a fern. Prof. Lindley tells of the hart's tongue, a small fern, that each frond produces about 80 sori, or fruit clusters, with an average of 4,500 spore cases in each cluster, each spore case containing some 50 spores—making a total of 18,000,000 spores to each frond.

So prodigious is the aggregate of seeds matured each year that, if all were to fructify and develop into plants, naturalists tell us, it would require a thousand times the present surface of the earth to afford the necessary room for the growth of one year!

On the other hand, if the seeds of plants were for a twelve-month to fail of being perfected, or of germination, we should lose all our annuals, wheat, rye, oats, barley, corn,

rice—upon the product of which single plant 300,000,000 of the human race subsist—to say nothing of the thousands of plants that contribute yearly to man's sustenance and enjoyment—and almost universal starvation would ensue. In another year our few biennials would be gone and—supposing the conditions of heat and moisture to remain as now—nothing would be left but the fruit of the *trees*, an insignificant part of the aggregate of seeds and fruits matured for man's support. In all this, we take no account of loss of beauty and fragrance, which, with with each recurring springtime, restore to man odors and glimpses of that far-off Paradise from which the flaming sword drove forth our disobedient ancestors.

ECONOMIC USES OF SEEDS.

Seeds contribute very largely to the necessities and convenience of man. A great part of the human race live on bread made of wheat, rye, or corn. In Northern Europe oats is a food product. In India the native races live on rice; buckwheat, millet, peas, and beans are also used to a large extent. Other seeds are in favor as condiments. Coffee and chocolate furnish decoctions for drinking. The seeds of the chocolate tree—the fruit sometimes containing as many as thirty seeds—are ground and made into the cocoa, chocolate and broma of commerce. The seeds of flax are full of oil; after this has been expressed, the farinaceous matter is largely used as food for cattle. The seed of the walnut has half its weight of oil; that of strychnine furnishes one of the most powerful medicines and poisons; other seeds, from their soapy nature, are used for purposes of washing by the natives of the countries where these trees grow. Thus as food, as medicine, and for manifold other uses, seeds play an essential part in the economy of the world.

"A SOWER WENT FORTH TO SOW."

We know the story on the surface as in the deeper significance of the parable—how that seed fell by the wayside, on stony ground, in fertile soil. What figure is more familiar than the sower in any land where, man must plant that he may gather? Ten thousand times in every generation of the past, he has gone forth "to sow," thoughtful only of bread for the eater, or garnered grain, or money store from the harvest to come. Ignorant as his oxen of the marvelous structure of the seed, and no more impressed than they with the mystery of plant growth, like a machine, age after age he has scattered the wealth of golden grain and seen it fall and die, and from it spring forth "first the blade, then the ear, then the full corn in the ear," and asked no questions that science would one day answer, dreamed no dreams that science would one day prove to be verities. To him for untold ages, in this department of nature, "wonder" has never been "the seed of knowledge."

But a new leaven has of late been at work in the world, and the times grow better. Slowly the heavy cloud of stolid indifference will lift, is lifting. This animal repose of intellect is giving place to mental activity that pushes inquiry into every department of nature, and with results so marvelous as to seem little short of the miraculous. Man is waking more and more to the wants of his higher nature. Slowly the great thought dawns upon the race that the world about us is a museum of wonders which ages of studious life cannot exhaust; that it is a paradise of beauty which angels might for ages enjoy. And as his thought grows more active, his attention more alert, his sensibilities more acute, he sees and feels yet more and more the purpose and the presence of the Great Designer, who

> Scorns not the least of all His works, much less
> Man, made in His image, destined to exist
> When e'en yon brilliant worlds shall cease to be.
> Then how should man, rejoicing in his God,
> Delight in His perfections, shadowed forth
> In every little flower and blade of grass!
> Each opening bud, and care-perfected seed,
> Is as a page where we may read of God.

COUNTY ESSAYS—SCHUYLKILL.

PRACTICAL WORK OF SCHOOL-ROOM.

W. L. BALENTINE.

THE following list of questions was submitted by County Superintendent Newlin to W. L. Balentine, of Mahanoy City. His answers are embodied in the essay.

1. Should a teacher make special preparation of the lesson for each recitation? 2. And should this preparation include the method of conducting it? 3. To what extent should a teacher use a text-book in hearing a recitation? 4. What are the objects of a recitation? 5. Should a pupil be told what he can find out for himself? 6. How far should a pupil be assisted in the preparation of his lesson? 7. What is the difference between teaching and talking? 8. Should the teacher confine himself to the printed questions of the author? 9. Why are "leading questions," or questions that can be answered by yes or no, objectionable? 10. Should the teacher reject partial answers and require every answer to be expressed in good language and in a complete sentence?

1. *Should a teacher make special preparation of the lesson for each recitation?* Unless the teacher is

perfectly familiar with the lesson and its bearings, so far as they ought to be presented to the class, and beyond that he should make special preparation for each recitation; I say beyond that, because to teach a lesson well one should know a good deal more of it than the lesson contains. He ought to have a reserve fund of information on it. A teacher should be so well prepared with each lesson, that were he called upon to recite it, he would be able to do so better than the best pupil in the class. He should make such special preparation for the following reasons:

It will inspire him with self-confidence; and that is essential here as it is in every other undertaking. It will enable him to "*know* what he knows, and to know what he *doesn't* know." A lack of confidence on the part of the teacher will beget a corresponding lack of confidence for him on the part of the pupils. He should feel and prove himself to be master of the occasion—always and without any airs or attempts at diplay. It is possible, and even probable, for a teacher to be confident of his ability to teach a lesson and yet not be able to do so; but such ill-grounded confidence will soon be discovered and result disastrously to the teacher.

If the teacher is well prepared the pupils will have confidence in his ability as a teacher and scholar, and *vice versa*. A teacher's promptness and accuracy will be a rebuke to indifference on the part of the pupils. If a teacher fails to make this impression, fails to give his pupils good reasons for believing and trusting in his superior wisdom, he fails utterly. Should he hesitate too frequently, or fail to answer a question, or solve a problem contained in the lesson, the pupils may put the worst possible construction upon it; and thus, by want of proper preparation, the teacher falls in the estimation of his pupils.

It saves time. When a teacher has the lesson on the end of his tongue, he can give his whole attention to the management of the recitation. Our periods of recitation vary from 10 to 30 minutes, and we find this rather too short than too long. This time belongs to the class. Facts, illustrations, apparatus for experiments, should all be at hand when the recitation begins, so that the teacher need not spend from 1 to 10 minutes in a "still hunt" for an answer to a question, or in thinking out a problem, or in hunting up apparatus. The thinking must be done before the recitation hour arrives. The most unfavorable place and time for a teacher to study is in the presence of his class during a recitation. Those who put it off until then, do so at their peril. Besides, if the teacher is prepared, he wastes no time in circumlocution, and there is no time lost in guessing and in senseless debate by the class.

He shall make special preparation to avoid teaching error. I have known teachers to teach positive errors, errors of fact, errors of inference, errors of pronunciation, etc., just because they neglected to prepare the lesson. Sometimes teachers will take a false position in reference to something in the lesson, and, unwilling to yield to the criticism of the class, will maintain that position, even in the teeth of the text. This is very unfortunate, and would be avoided by special preparation.

The teacher's example should be an inspiration to his pupils. We would all do well to keep this old-fashioned maxim, that we teach by example, green in our memories. Pupils, knowingly or otherwise, learn to do, to a great extent, as their teacher does. If the teacher is habitually ready, accurate and careful in expression, some of his pupils will want to be so too. Show me a class habitually inaccurate, unready and slovenly in expression, and I will show you a teacher who makes no special effort to train them.

A teacher should make special preparation for his own profit. We are forming *habits* of study. As we do from day to day, so will we get into the habit of doing. Habit, noiselessly and unconsciously, is forging her chain around us. Before we are aware of it we are in her iron grasp. By carefully preparing each lesson a correct habit of study is formed, then the tighter and stronger the chain the better. This habit established, knowledge becomes more available, and the teacher is enabled to make constant advances in the attractive and ever-widening areas of thought and knowledge.

2. *Should this preparation include the method of conducting it?* I think that the teacher should decide upon the plan before the recitation begins. Where there is but one method of recitation, where the plan is unalterably fixed, there is no necessity for any preparatory thought as to method. The pupils know just *what* will come, *how* it will come, and when their turn will come, and what's the use in breaking in upon such delightful uniformity? But it ought not to be so. No one method should be exclusively adhered to; because it begets monotony and indifference. Methods should change too to suit the lesson. Some lessons can be taught better by one method than another. The catechetical method is sometimes to be preferred to the topical, the written sometimes to the oral, etc. Since methods should change, the plan to be pursued at any recitation should be determined beforehand. The method having been selected, the teacher knows just what apparatus to get ready, what to tell his pupils to do in the way of preparation, so that there be no bother at the time of recitation about pens, paper, books, slates, pencils, etc.

3. *To what extent should a teacher use a text-book in recitation?* The principle is, to use the text-book as little as possible. It would be better, were it possible, to use no book at all during recitation. The text-book hampers the teacher in proportion to his dependence upon it. The manuscript hinders the speaker. I could speak with more ease to myself, and probably with more satisfaction to you, could I dispense with this manuscript; but most teachers have neither the time nor the talent to memorize everything they have to communicate. There is, therefore, to be some use made of helps, in the shape of text-books, or their equivalents.

I find it difficult to make a general rule on this subject, but I should think that the text book is to be used by the teacher during recitation, in those branches in which it is necessary for the exact words of the text to be repeated by the teacher or pupil. But even this is to be so limited as to exclude the text-book for definitions and principles, as they ordinarily occur in teaching. To be more precise, the teacher should use the text book for the "*exercises*," in the application of the principles in the various branches taught; for mathematical problems (not geometrical theorems), map questions in geography, orthography, etymology, so far as the words are concerned, and in reading, whether English or some other language.

I do not wish to be understood either as *limiting* the teacher to the use of the text in any branch of study, or of attempting to *exhaust* the text on every subject. But teachers, like men in the other professions, do not always control circumstances, and hence cannot always be thoroughly prepared with every lesson, and so, sometimes, like the others referred to,

when the crucial moment comes, the vision is obscured, and the memory a blank. In such cases I should fly for refuge to the text-book. Is it not better for the teacher to use text-book than to *fizzle*, or blunder, or fail outright? Above all, teachers should be accurate, and therefore, while the use of the text-book should be reduced to the minimum, it should be at hand for an emergency.

4. *What are the objects of a recitation?* To test the pupil's preparation. A lesson that is not be recited will not be properly prepared—probably not prepared at all. Pupils ought to be tested, first of all as to what they know about the lesson themselves. They should know that it is their duty to bring out what the lesson contains, and not to be mere receptacles for the teacher to pour into and fill up. The proof of a pupil's preparation is his ability to express clearly the ideas and facts of the lesson. The idea will be obscure and imperfect in proportion to the obscurity and incoherence of the language used in recitation. I believe there are some ideas for which we have no words, but they are not in this account. When pupils say, "I know, but I can't tell or write it," they ought to say, "I don't know it well enough." Knowledge and its expressions are so intimately united that the former does not commonly exist without the latter, and hence testing a pupil's knowledge of a lesson is the same as testing his ability to express it. In this way the recitation contributes greatly to the acquirement of a command of language, and of ease and correctness of expression.

The recitation enables the teacher to correct errors. Errors of statement, errors of fact, errors of inference, errors of language, errors of observation, and errors of preparation. Advice in the way of preparing a lesson is often a great incentive, and saves the pupil a great deal of time and worry and disgust.

Another object of the recitation is to train pupils to be self-reliant, and to be sufficiently self-confident. In most of our schools it is impossible to prevent pupils from helping each other too much in the preparation of lessons. In many classes one or two do all the thinking; the others copy. This may be detected in the recitation. Then each is to be put upon his own responsibility. The fact that each must rely upon himself in recitation checks to some extent this slavish dependence too commonly seen in our schools. Timid pupils acquire sufficient courage, and those whose tongues outstrip their judgment, learn, under the fire of criticism, to be more modest.

The recitation enables the pupil to remember what he learns. It is well-known to us all, that the more frequently we tell or write what we think about, the better it is retained, and unless we do repeat what we learn, we are by no means sure of it. The recitation affords a means of fixing facts and impressions, not only by this means, but by concentrating the mind upon them, discussing them, and eliciting criticism upon them.

The recitation gives the teacher an opportunity to add new matter to the text, both as to fact and illustration. This is not necessary in every case, but it is usually desirable and necessary for the teacher to make use of new illustrations, at least, in the recitation. No author can *introduce* much less elaborate all the illustrations needed for explanation. Besides, pupils take more delight in reciting, and in all school work, if the teacher gives them something more than is contained in the book, or requests them to look up some matter on the lesson not found in the text.

It is an object of the recitation to give encouragement to pupils, and to hold out to them proper incentives to study. It is more common for teachers to find fault with their pupils in recitation than it is for them to commend what is excellent. Why should not that which is well done be commended? Indiscriminate praise is disgusting, but properly bestowed, how good it is.

I have found it quite desirable at times to explain to pupils the purpose of study, or of certain branches of study. It is a relief to know that the toil of study is not to be fruitless, to know that the mental drudgery at the threshold of every branch of learning is not to be done for *fashion's* sake. The American question, "What's the use?" will come up, and, while pupils are not the proper judges as to the curriculum, I know by experience, that it is a relief and encouragement to *see* the use.

5. *Should a pupil be told what he can find out for himself?* As a rule, a pupil should not be told what he can find out, *in reasonable time*, for himself. Pupils should be trained to rely upon themselves as much as possible, so that they acquire a habit of self-reliance—a very necessary qualification in the character of man or woman. But many incidental questions arise during recitation, and at other times, which the pupil could answer, though the inconvenience of doing so, occasioned by not having at hand the proper sources of information, would be greater than the advantages to be derived from it. To illustrate—if while hearing a class in physics I should use the term meter, and should be asked the meaning of it, I would not say, "Go to the arithmetic and find out the meaning yourselves." I should tell them at once, and so make a better use of the time. Still I am of the opinion that a prevailing prominent error in our system of instruction is giving too much assistance—telling too much. It is producing a crop of imitators. The pupil who is helped all along the way will be neither able nor willing to "paddle his own canoe," or if he attempts to do so will be ingloriously capsized.

6. *How far should a pupil be assisted in the preparation of his lesson?* Just so far that he may know how to go about the preparation of it in a proper way. If the lesson is unusually difficult, it is proper for the teacher to point out the difficulties and suggest their solution, but no more. Pupils should be taught that the lesson is a trial of their strength, and that to fail is to acknowledge defeat, but that to succeed is to score a victory. I think, too, that by helping pupils a good deal, they come to distrust their own ability, and this is, in many cases, disheartening and enervating.

7. *What is the difference between teaching and talking?* Teaching is communicating to another the knowledge of that of which he was before ignorant. It is educating. Talking is familiar or unrestrained conversation. Now, to communicate knowledge, or to educate, some conversation is necessary. (And I would say here, in passing, that the conversational plan of teaching is the proper one for quite young people.) But teaching differs from talking in that the former is not unrestrained conversation. In teaching, conversation has a special aim, and that is to hold the minds of the pupils closely on the subject of the lesson, resolutely refusing to entertain irrelevant thoughts, or give expression to them. In talking restraint is kept at the minimum. The design is to make all hands feel free and easy; and this is done by purposely avoiding all mental effort. In teaching, the minds of both teacher and taught are on the alert, ready and eager for *work*, and not play. The subject is developed and presented in a logical way, the end

being kept in view from the beginning to the close of the lesson. In talking the mind throws off its guard, throws down its defence, and solicits and gives expression to ideas relevant and irrelevant, sensible and nonsensical. No attention is paid to the critical and and logical elaboration of a subject, because that requires effort. Those who are in the habit of playing teacher in familiar intercourse instead of instructing or pleasing their audience usually bore them. The teacher who is in the habit of descending to familiar talk with the class on the lesson in hand, will be considered by the pupils a capital fellow, but no teacher.

In teaching the pupils do most of the speaking. In talking the teacher does the most of it. I have known teachers who, instead of having pupils recite to them, seemed anxious to recite the lesson to the pupils. When the teacher is well prepared, this will assume the form of a lecture, but when unprepared will become attenuated into the air, or degenerate into mere gabble. Sometimes a teacher should talk, once in a while should lecture, but his main business is to *teach*.

8. *Should a teacher confine himself to the printed questions of the author?* The principle referred to and the remarks made in reply to the questions concerning the use of the text-book by the teacher in recitation will apply here. Besides, a pupil may answer the printed quetions correctly, and yet not know the meaning of it. In short, it is better for the teacher to make his own questions, even if they are not quite as good as those in the book; because if he depends constantly for his questions on the book, he will never acquire the art of questioning.

9. *Why are "leading questions," or questions that can be answered by Yes or No, objectionable?* "Leading questions" are useful in recitation when it is desirable to have a pupil commit himself when he purposely or otherwise refuses to come to the point. But they are usually objectionable, 1. Because they provoke very little effort on the part of the pupil as to thought, and none at all in the expression of it. If there is no effort required in the recitation, no effort will be made for it. 2. Because the teacher has to do all the reciting, and it is not his business to recite.

10. *Should the teacher reject partial answers and require every answer to be expressed in good language, and in a complete sentence?* Of course, every answer ought to be given in good language. I do not think, however, that *every* answer should be in a complete sentence. When a single pupil is asked a question I think the answer should be in a complete sentence, when that sentence is not necessarily stereotyped. For example, take the following questions: What is the capital of Ohio? Ans. Columbus is the capital of Ohio. What is the capital of Pennsylvania? Ans. Harrisburg is the capital of Pennsylvania. What advantage have these complete sentences over the mere words Columbus and Harrisburg? Those who say that every answer ought to be a complete sentence should require their pupils to say, "There are 16 drams in 1 oz.," "there are 16 oz. in 1 pound," etc. But when the sentences admit of variety of construction, and hence some ingenuity and effort on the part of the pupil, then they should be required; for one purpose of the recitation is to train pupils in correct expression.

In questioning a class as a whole, either the answer in a single word, or the stereotyped sentence is to be preferred to the other, because if each one of a dozen had a different sentence, there would be a Babel of confusion, and no answer understood.

EXTRACTS AND SELECTIONS.

AN American writing about Professor Schenkel, the rationalist, at Heidelberg University, states that at a recent lecture of his "against the Ten Commandments," but "three students were present, who silently took notes and departed."

A sporting man remarked, after hearing Bob Ingersoll's lecture: "It was a spicy thing to laugh at for an hour, but not a very cheering doctrine to have around when there is a funeral in the house." But funerals come into every house some time.

Some wiseacre in New Orleans has discovered that the earth is not round, because in one of the visions of the Book of Revelation "four angels" were seen standing on the "four corners of the earth." He says that he expects to be "denounced by the Biblist," but we rather guess he will only be laughed at.

Another irate parson in San Francisco has taken up the role of the howling dervish of education, and denounces the public school as the latest form of "godlessness" in California. The impression, over here in Boston, is that Kallock, Kearney, the sand-lot gentry, the statesmen engaged in pummeling poor John Chinaman, and the noble army of "hoodlums" are not exactly the followers of our old friend, John Swett, and his tribe of wide awake teachers. This world has always had on hand an over-supply of that style of California parson; a man with eyes that range heaven and earth to spy out some little heresy against his own ecclesiasticism, but blind as a bat to that most perilous American heresy of ignorance and barbarism which has already cast us into the Inferno of one civil war, and, unless repented of, will send any nation to perdition as surely as our God is the God of universal light.—*Bicknell.*

PEOPLE cannot help having been born without tact, any more than they can help having no ear for music; but there are occasions when it is almost impossible to be quite charitable to a tactless person. Yet people who have no tact deserve pity. They are so often doing or saying something to get themselves

into disgrace, or which does them an injury. They make enemies where they desire friends, and get a reputation for ill-nature which they do not deserve. They are also continually doing other people harm, treading on metaphorical corns, opening the cupboards where family skeletons are kept, angering people, shaming poeple saying and doing the most awkward things, and apologizing for them with a still more terrible bluntness. If there is one social boon more to be desired than another, it is tact; for without tact the career of the richest and most beautiful is often greatly marred.

LET Science lead the student to the mount of vision; let her turn her heaven-piercing tube to the sparkling vault; through that let him observe the serene star of evening, and see it transform into a cloud-encompassed orb, a world of rugged mountains and stormy deeps; or behold the palest beams of Saturn, lost to the untaught observer amidst myriads of brighter stars,and see them exepand into the broad disk of a noble planet—the eight attendant worlds—the wondrous rings—a mighty system in itself, borne at the rate of twenty-two thousand miles an hour, on its broad pathway through the heavens; and then let him reflect that our great solar system, of which Saturn and his stupendous retinue are but a small part, fills itself, in the general structure of the universe, but the space of one fixed star; and that the power which filled the drop of water with millions of living beings, is present and active throughout this illimitable creation! Yes, "the undevout astronomer *is* mad!"—*Everett.*

THREE American cities are almost simultaneously engaged in the work of establishing schools for training young men and boys in mechanical handiwork. A school for art-workers in wood and metal is to be opened in New York, and St. Louis is building a large workshop, to be used as a mechanical training school in connection with the public school system of the city. In Philadelphia the Spring Garden Institute has undertaken to establish working schools for day and night classes, where instruction is to be given by skilled mechanics in chipping, filing, forging, turning, cabinet work, etc. Work benches are now being built for these schools; four classes of pupils have been organized. The Spring Garden Institute's schools will be more or less experimental, and will be extended in the scope of their work and enlarged according to the amount of support they receive from pupils and manufacturers. The St. Louis Manual Training School stands on a different basis. It is to be fully equipped and supported by the city, and the pupils entering it at not less than fourteen years of age will receive a training lasting three years. This will include, besides instruction and practice in the use of tools, instruction in mathematics, drawing, and the English branches of a high school course. The St. Louis system is the proper one; but in the absence of schools of mechanical handiwork attached to the public school system, the Spring Garden Institute may do a good work in training mechanics and artisans, who, while attending machine tools, have little opportunity to acquire skill in manual labor.

IT is probably natural that at the last the scenes which have made the strongest impressions in life should be recalled by memory. The old mountaineer, when he comes to die, with his last whisper says his snowshoes are lost, with the stage-driver he is "on a down-grade and cannot reach the brake," the miner cannot get the air pipe, the sailor says "eight bells have sounded" and the gambler plays his last trump. A little girl died here a few years ago, and as her mother held her wrist and noted the fainting and flickering pulse a smile came to the wan face and the child whispered: "There is no more desert here, mamma, but all the world is full of beautiful flowers." A moment later the smile became transfixed. In an Eastern city, not long ago, a Sister of Charity was dying, and at last from a stupor she opened her eyes and said: "It is strange; every kind word that I have spoken in life, every tear that I have shed, has become a living flower around me, and they bring to my senses an incense ineffable."

AN eloquent piece of writing gains much by being read or spoken with good elocution; and even an inferior production will often appear well when delivered with effect. On the contrary, the most splendid composition may be spoiled by a poor delivery. Lord Erskine, one of England's most distinguished orators, said of Burke: "He is, of all writers, the most eloquent, and of all speakers the most tedious." The person thus addressed expressed surprise at this remark, but he proceeded: "One evening, at the House of Commons, when Burke was delivering one of his interminable harangues, I became anxious, with others, to go away. But I sat just under Burke's eye, and was afraid I could not leave without his noticing me. At last I dropped

my handkerchief, and, stooping to pick it up, I crawled on all-fours behind the benches, and thus succeeded in escaping. The next morning, on reading the report of his speech in the newspapers, I was astonished. What a splendid effort! No longer marred by his wearisome manner and Irish accent, it riveted my attention. I read it through again and again, and carried the paper with me into the country, and kept it in my pocket till it was completely worn out."

THOSE studies not bearing on the school work should be deferred until vacation. Who ever knew a law or medical student to be a successful teacher, especially when those studies were pursued with a view to practice? The teacher must be free of most other work. No man can teach who devotes his time, from four o'clock in the evening till nine the next morning, to some other work. No woman can do justice to her work who must toil in the kitchen or at the needle when out of school. There must be, to a certain extent, a disregard for everything not connected with the science of teaching. It is said of Aristotle that his energy, zeal, and success were so great that he was called the "soul" of his school. The lives of Pestalozzi and Frœbel, in the past, and of Horace Mann and Mary Lyon, of more recent times, are striking examples of what concentration of effort can do, even when opposed by the most adverse circumstances. While the teacher should have literary culture, he should not lose sight of his duties at school. Very much that he reads should bear upon his work. He should not undertake to teach what he does not fully comprehend. Men in other pursuits could achieve nothing did they not concentrate their powers to attain eminence in their own branch of business.

CONTRARY to the obvious suggestions of fact, education is still too generally regarded as existing, during its earlier stages, in arbitrary exercises of memory on combinations of printed characters, abstract numbers, or even the metaphysical relations involved in the science of Grammar. The excuse offered for a blind following of precedent in this direction usually is the peculiar susceptibility of memory during the period of childhood, and the comparative difficulty experienced in attempts to cultivate it at a later stage. Were the educational cultivation of memory directed to the retaining and treasuring up of those stores of knowledge which are naturally accessible to the mind of childhood, within the range of its daily observation, the plea would be justifiable; man's endeavors would be in harmony with the obvious instincts and endowments of the mind, and would tend to its natural expansion and development. But, directed to the mechanical and arbitrary results at which these endeavors so generally aim, their influence is detrimental. Their immediate effect is to quench the natural thirst for knowledge, to create a distaste for intellectual activity, and thus to defeat the best purposes of education. The law of true culture lies in the primary craving of the young mind for material upon which the understanding may operate; digesting it in due season into the regular form of knowledge which memory loves to retain, and which judgment ultimately builds up into the systematic arrangements of science.—*Barnard.*

TO-DAY, the most hopeful feature of American society is this coming to the front of the finest American womanhood in every grade of the American school. The presence of the noble army of schoolmistresses (and a nobler body of women was never seen on this earth) in the school-rooms of the West, more and more taking the most responsible places of instruction and supervision, almost monopolizing the Sunday-school and the religious work of the church, is God's bow of promise bending above that wild waste of savage conflict we call western business and its politics. The most attractive side of Southern affairs, to day, is the affecting spectacle of these loyal Southern girls crowding every new avenue of the higher education—often the daughters and wives of illustrious families, wrecked in the great revolution, beginning life anew as teachers in the common schools. We know fifty young colored girl-teachers in Southern schools who are a prophecy of a great future for their race, and who deserve the admiration and support of the whole American people for their Christian womanhood and splendid work. Every highway and by-way that leads to the school-house and the college is swarming with American girls. Let them have way. There is no danger that they will be "educated above their sphere." Woman's whole sphere is not in the rear of the baggage-train, binding up wounds, saying prayers, and keeping the children out of the range of masculine artillery. All this she can and will do out of the depths of her unselfish love. The other half, beyond question the grander half of her sphere, is to come to the front in the school, the church, and society,

and so instruct and train the children of the new generation that this horrid lunacy of the past, inflicted on the world by man, shall give place to the age of light, and love, and peace. —*N. E. Journal of Education.*

Do we study our pupils as well as our books, and adapt our rules and methods to the peculiar disposition of each one, or do we make an iron bedstead of these rules and methods, and cut all our pupils to fit it, disregarding the diversity of traits and propensities that may exist among them? In our general conduct, both in school and out, do we set our pupils an example worthy of imitation, or are we guilty of doing or saying things for which we would punish them? Do we appear neat, orderly, polite, and indicate to them the way that they should go, by going in that direction ourselves? Do we endeavor to educate our pupils intellectually, morally, physically, or do we pay all our attention to their intellectual advancement, and close our eyes and ears to the fact that the ultimate success of every individual must stand upon the great tripod of intellectual, moral and physical development, and that the omission of any one of these three great factors destroys the utility of the remaining ones? In fine, are our methods of instruction, our rules and regulations, our precepts and example, such as tend to the normal development of the faculties of our pupils, and to prepare them for the business of life and the duties of good citizens and good men?

The "variety columns" of the newspapers tell the story of a man who, having wound his clock daily for a series of years, was made indignant by the discovery that it was an eight-day clock. Seven-eighths of his trouble had been taken for nothing! If only this fact could be thus definitely brought to many men—and perhaps more women—they would, upon the review of the past, find equal reason for being provoked with themselves. Yet, over-care is better than indolence, and over-prudence than carelessness. If men performed only such acts as are indispensable, and saved themselves from all diligence for to-day and thought for to-morrow, the world would be much less worth living in. Its population would stagnate. It is better, in looking back, to find one has done more than was necessary, than to be awkwardly convinced that he has done less. Reviewing the weary years of "hard times" from which the business world has been emerging, there must be not a few who find that they might have saved themselves seven-eighths of their trouble and worry. If there be, however, some degree of mortification in the retrospect, there is comfort in the present. The clock still runs, and the conviction cannot be avoided that there is more "clockwork" in business affairs than most men are aware of. Prosperity and adversity come in cycles, as time touches now noon and now midnight, and as tides ebb and flow. The ebb must have its turn, or there could be no flood. We cannot count always on a rising market, and we can easily ever-estimate the indications of prosperity.

HIGH SCHOOL CABINET, AND HOW TO USE IT.*

W. A. BROWNELL.

There are two methods of securing and using a High School Cabinet of fossils and minerals. One, to have a few thousand dollars appropriated for that purpose by the Board of Education, provided its members are in a liberal mood, and with this money secure showy specimens, lock them closely in an elegant case, label them "hands off," and once or twice a term pass the class in geology before them, pointing out the most prominent things, calling them by their Greek and Latin names and making some profound remarks upon their chemical composition, laws of crystallization, dichroism, etc. Another method is to secure some hammers and chisels, and either alone in the fields, out of school hours on Saturdays, and during vacations, or with members of the geological classes scour the hills, valleys and plains, hunt the quarries, delve into the various mines in the vicinity of your school, and secure material not only for use in the every-day recitation, but also to be used in exchange for fossils and minerals in other localities. The material thus secured is to be thoroughly classified and labeled by the teacher, calling on his pupils to assist, in so far as they are able, and then used in the every-day recitation, the specimens being passed freely from hand to hand and yet be so carefully treated that not a delicate crystal shall be scratched or harmed.

I recently visited the geological cabinet of one of our colleges where, by a liberal outlay of money, had been secured a most admirably selected collection of fossils, ranging through all the geological formations and well illus-

*Read before the Massachusetts State Teachers' Association.

trating the typical organic forms of every period; where also were cases filled with all the lithological specimens essential for an extensive and careful investigation of the chemical and physical facts relating to rocks, and where an entire story of a noble edifice had been devoted to the uses of this department, and yet I was shocked to be informed by the students of the college, that this cabinet was merely a *visiting* place for the student, instead of a *working* place, and that, on the average, a student in his four years' course would take a casual look through this collection, perhaps three or four times. In fact the college had no Professor of Geology, the one under whose supervision this magnificent cabinet had been secured, having resigned a few years before and no successor having been employed. As I passed through this museum I had a vivid illustration of the "hands off" policy, since by the thick accumulation of dust, which sadly obscured the specimens, one would infer that the cases had been locked several years ago, and that the key had either been thrown away or lost.

An extensive dealer in fossils and minerals in the city where this college is located, recently desired to fill an important position among his employees, and finding no suitable candidate among its graduates, sent to a neighboring city and secured the services of a graduate of a High School where the other method of studying geology is adopted.

Having had personal experience in building up a cabinet where no funds to any extent were appropriated, it may be best for me to state my plan of working. When I entered the High School of Syracuse, New York, nine years ago, its cabinet, fossils, and minerals was merely a fortuitous accumulation. By extending our trips into adjacent countries we obtained the fossils which did not appear in our locality In the oldest formation (that of the Niagara Period, Upper Silurian Age), in addition to its characteristic fossils, our classes often found beautiful calcite and dolomite geodes. In the rock next above, although we found fossils, but rarely still, we were richly compensated for their absence by the abundance of beautiful, transparent selenite, snowy gypsum and casts in clay of salt crystals. In a group of water-line rocks we were greeted with geodic cavities lined with delicate purple crystals of fluor spar, sometimes also associated with calcite and quartz crystals. In some places our classes found deep, vertical fissures in this water-line, into which water had percolated, charged with limestone in solution, and which it has deposited, sometimes massive, sometimes as double refracting Iceland spar, sometimes as dog-tooth spar, and sometimes as nail-head spar.

In the Oriskany sand our classes luxuriated in fossil gathering, for scarcely a cubic yard can be found that does not, either upon its surface or within its mass disclose organic remains. The classes are here enabled to trace the outlines of the ancient ocean in which this sandstone was deposited. The enthusiasm with which a class of young gentlemen and ladies will search out the borders of such a paleozoic sea is truly refreshing, and the superiority of the knowledge thus gained over that obtained exclusively from text-books is very marked.

By work in the field the student learns the additional fact that to separate the fossil forms from the compact imbedding rock is a much more difficult task than he would imagine were he to consult his text books only. Indeed, many of the forms must be studied in the fields, for it is practically impossible to remove them in a perfect condition.

The chemical action of water upon geological formations is also finely displayed here, since limestone is somewhat soluble in water, and is especially so in water charged with carbonic anhydride. The waters which have fallen upon the earth, having become charged with carbonic anhydride from the decomposing vegetable matter through which they pass, percolate through the underlying limestone, dissolving out extensive caves, and issuing from the base of the hills into the adjoining valleys, deposit their burden of dissolved limestone in great accumulations of travertine, incrusting twigs, leaves, stumps, roots, and trunks of trees, producing most interesting and beautiful specimens for our amateur collectors.

The caves thus formed may in some cases be explored, while in other instances they give evidence of their former existence by the superincumbent mass of earth and rocks being depressed into them, in some cases forming most beautiful circular lakes. Another point of interest about these rocks is the fact that being very compact and durable they have retained very perfectly the smoothing and grooving which they received during the glacial period.

Wherever the melting glacier deposited its *debris* of pulverized rock upon them, so as to protect from surface erosion by water, they present finely-polished surfaces as mementoes of the ice masses which once slowly moved

over them. It is interesting to observe a class of students speculating upon the probabilities of finding a smoothed surface underneath a mass of earth, basing their expectation upon the fact that all the earth above the rock, as they see it cropping out from the side of a valley, is composed of glacial deposit, and hence the surface of this rock must have been the basis on which the glacier moved, and then after having advanced their opinion, to see a delegation from the class remove the earth from a portion of the surface, while others stand about eagerly watching for the disclosed rock. A scream of delight and satisfaction from the girls announces that the surface is found to be smoothed, and that their theorizing was based upon a solid foundation.

The class return to their books from such a trip with a more favorable opinion of the theories which they study, relative to rocks, and henceforth they regard theories not as wild fancies of some speculative brain, but as rational explanations of what, from the nature of the case, cannot be absolutely proven.

Among the forms which our pupils most eagerly collect are the peculiar trilobites with prominent eyes, the lenses of which are as distinct as those of animals now living. In no other group throughout the entire range of geological history are so perfect eye lenses found, and here two varieties of trilobites abound, possessing these lenses in a state of very perfect preservation.

These rock formations constitute our *field* text-book, and our pupils never flag in deciphering the hieroglyphics upon its pages. To this they go from their *printed* text-book to corroborate its statements, and from this they return to their books with ever renewed zeal and enthusiasm.

The abundance and variety of fossils, opens up a vast field for classification, and for observing the transformations and successions of life, from one period to another, and during the past three years we have arranged in our cabinet; from these rocks, several thousand forms, ranging through many genera, species. and varieties, all named, labeled and numbered upon our shelves. With these as a nucleus, we have made exchanges with geologists and mineralogists, in nearly every state of our Union and in various parts of Canada, by which means we have secured *some* representatives from every geological period throughout all geological time, our only expense in cash being the cost of freight. During vacations, trips have been made to more distant localities; and from Colorado, Kentucky, Pennsylvania, Ohio, and Massachusetts, various fossils and minerals have been taken from the fields, shipped to our cabinet and subsequently classified, labeled and arranged.

There are probably to-day 15,000 specimens in the cabinet, which, if purchased from stores which supply these things, would doubtless cost $5,000, and yet which have cost in the matter of freight and travel but a few hundred dollars. The fossils of each period are ranged in regular sequence, so that the pupil may begin at the Archaic age, and by a direct passage about the room, may examine each period up to the age of man. The class-room is furnished with chairs, and these are moved from time to time so as to face the particular division of the cases which contains the fossil or mineral forms which are the subject of the lesson under consideration. After the statements of the text-book have been given by the pupils, the cases are opened, and the specimens are passed from hand to hand for examination.

Duplicate specimens, without labels, are subsequently used in reviews and examinations, until the pupils become somewhat expert in identifying and classifying both minerals and fossils. One result of this system is, that every member of the class, however dull in general, becomes quite an enthusiast in this department, and in some instances pupils who are usually dull and listless, have been so awakened to study by the attractiveness of this natural method, that it has colored all their subsequent work in other branches of study.

Another result is that in nearly every class will be found some who have peculiar aptness and liking for this branch of science, and by becoming acquainted with the methods of classifying rocks and fossils, as well as having experience in collecting them, they are led to pursue the subject more or less at their leisure after graduation, and several amateur collections have been made by our graduates since this plan of instruction was adopted.

No teacher need hesitate in his efforts to even familiarize his pupils with the long scientific names of fossils, so long as he permits a free and frequent use of specimens, for the name almost always signifies some prominent characteristic of the fossil, and this will ever become a reminder of the name. The success of the cabinet I have described does not depend on the locality. The fact is that *any* locality is good if properly worked, and no teacher of geology can be found in the

United States who has *diligently* labored for a good working cabinet and has failed to secure one. The comparatively small expense attending the transportation and collection of materials will in almost every instance be readily met by the Board of Education, and this will especially be the case when the members of the Board are convinced that it is a profitable outlay for the school.

When a teacher makes judicious use of all the appliances within his reach he will generally find the Board of Education ready to second his well-directed efforts at enlarging his appliances.

EDUCATION IN EGYPT.

PROGRESS IN THE LAND OF THE PHARAOHS.

SINCE the first modern impetus to education in Egypt, given by Mehemet Ali, the progress made is quite encouraging. Besides the several military schools established by that famous ruler, and the excellent Medical college he founded at Kasr-el-Eynee, near Cairo, he founded a school of languages and a number of elementary schools at Cairo and its environs, and established a printing press at Boolak that has done important service in the publication of public documents and other matter for the enlightment of the people. He also founded a school of medicine at El-Khakah, together with a military hospital and a veterinary college. There, too, is a school of music. The late Khedive Ismail, whose greatest sins, perhaps, were his ambition to surpass all that his grandfather did for the enlightenment and development of Egypt, and financial recklessness in the prosecution of these purposes, revived the schools established by Mehemet Ali wherever they had begun to languish through government neglect, and went far beyond his predecessors in measures to encourage public education, so that there are at this time two systems of education in Egypt—first, the governmental schools; second, the mosque schools and then the Arab primary schools. The former system includes a polytechnic school, schools of surveying, law and languages, medicine, midwifery, two preparatory schools at Cairo and one at Alexandria, a normal institute, four industrial schools, two girls' schools, and twenty-three municipal schools. The normal institute is doing much to improve public instruction by supplying that great want of the country, intelligent, well-trained, native teachers. The course of study in the polytechnic school embraces Arabic, English, French, geography, history, drawing, higher mathematics, physics, mechanics, chemistry, and geology, and is extended over six years. The government maintains, also, a school for the blind.

The mosque system is under the control of the priests, and the highest considerations urged for the maintenance of these schools, tithes and gifts of the faithful, is the importance of teaching the Koran, which with the exception of penmanship and a little elementary arithmetic, constitutes the burden of study. There is a mosque school in nearly every community of any considerable numbers; but El Azhar, at Cairo, is not only the principal institution of this kind in Egypt, but the largest in the world. Students flock to it from all parts of the East where the Moslem faith prevails. The number in attendance in 1877 was over 11,000, and the faculty numbered 325, including some of the greatest Arabic scholars of the age. One division of these lectures is on the theology of the Koran: another on the poetry of their sacred book, and its most distinguished commentators: another on its ethics, as applied to government and private business, etc.

Besides the above there are nearly 5,000 Arab primary schools for the instruction of the Fellahin, or native peasantry. These are practically free schools, sustained out of local taxes. They are limited for the most part to teaching writing, the arithmetic of ordinary accounts, and reading the Koran.

One feels a twinge of regret for the misfortunes of the deposed Khedive, when he reads that whereas the total expenditures for educational purposes by his predecessor amounted to less than £4,000 per annum, under Ismail they aggregated £52,500, exclusive of the cost of the military schools, and of this amount the Khedive contributed no less than £12,500 from his private purse.

Finally, there are the non-Moslem schools of Egypt, of which the Copts have sixteen, the Armenians two, and the Jews several primary schools, besides academies at Cairo, Alexandria, and one or two other points The American Mission Board have schools connected with all their principal stations, some of which are in a very flourishing condition, as is also Miss Whately's British Mission School. It is at these latter institutions that most is being done for the education of girls. Foreign merchants, foreign officers, and other Franks doing business in Egypt, have encouraged the establishment of two

undenominational schools, and joined with wealthy natives in contributing freely to their support. These are denominated "Schools Universal," and are doing a good work.

PHILOSOPHY OF MUSIC IN SCHOOLS.

T. D. ADAMS.

A COMMON fault in character is lack of equipoise; it is one-sided. A well-balanced mind is a desirable result of education, and when we do not see this result, the presumption is that something has been overlooked, or that some wrong has been done. The question can hardly be asked too soon, whether in our plans of education some large portion of our common nature has not run to waste; whether there be not something still finer and more delicate, which, if properly trained, may give as much distinction to the human unit as any one of those old triangular themes,—the mental, the moral, the physical —mentioned long ago. I allude to the emotional part of human nature.

With this brief generalization, I offer a few thoughts upon vocal music as a part of public education, asking for its compulsory introduction into all the schools of our land. I am aware that in the cities and large towns it is practiced, and sometimes taught. We can hear beautiful singing in many schools. But it has been viewed chiefly in the light of a pastime, or an accomplishment for the favored few. It has not been considered a necessary part of education; nor with reference to its philosophical relations to other means of culture. It has not been supposed to have any scientific basis of facts; nor even to be an essential part of voice culture, underlying the legal requirement of reading as a branch of common education. Still less has it been viewed as an essential thing in the qualifications of the teacher. No subject in the range of education has been more completely misunderstood. Through all the early history of education in this country, it has been locked in profound mystery. It has been taken for granted that divine Providence was extremely partial in the distribution of a valuable gift, and that the vast majority of mankind was shut out from its profit and enjoyment.

It is not to the credit of the leading educators of our country that they have not discovered the truth in this matter, and have led the common mind to no better conclusions. But the reason is plain: they have themselves been the victims of this old prejudice. Their parents could not sing, and the children were taught, from the earliest dawn of understanding, that this delightful art was never intended for them. Even at the very moment when a lusty roar was coming up from the cradle, the fond parent would insist that the child had no voice; when the household was perforce reduced to absolute silence lest the little slumberer might stir, still that child had no ear! The idea would be ludicrous and laughable, were it not painful.

The prejudice grows through all the years of childhood, till the tablet of the mind becomes hard and unimpressible; a divine gift has been driven or scourged out of the soul, which wanders on so much poorer through its subsequent life. How much it affects the happiness of that soul after this life, I will not even conjecture; but certain it is that its education is incomplete by the practical annihilation of a human faculty.

While now we have some excellent musicians among our best educated people, it is a lamentable fact that among those whom by virtue of appointment and position we call educators, we seldom find one who can read an ordinary piece of music by rule and at sight. It is time that this old theory of divine partiality were exploded; a thorough application of nitro-glycerine is the only treatment which it deserves. We can arrive at the truth only in the same way that we do in other scientific investigations. We must take our stand among the facts. Here I propose to introduce sundry facts which have come under my recent observation.

About one year ago, I was appointed superintendent over twelve schools, and also principal of the high school in the same system. I found mimetic singing as a pastime in them all It consisted of only a single part, the soprano. Only a part of the girls and a few of the boys united in the service, and made all the music for themselves aud the rest. In five of these schools, numbering more than two hundred scholars, accustomed to meet every morning, there were only about seventy-five who could join in the music of the chapel exercises. Among the first things was the introduction of music as a study, it being attended with no expense except for five lines of paint on a blackboard in every school-room. When the assembled schools were informed that the work was to begin in earnest, and that every pupil was expected to engage in the study as attentively as in any other, the wise look of incredulity which came over the faces of many pupils, and es-

pecially of the more knowing ones among the young gentlemen, was indeed amusing After that time, the first morning of every Wednesday was given to that subject. I doubt whether any other hour of the week resulted in so much profit, cheerful spirit, and mental discipline Beyond this, it seemed to be the most healthful preparative for the study of any other branch.

I now invite attention to visible results. Let us keep in mind that at the beginning of the work there was not a pupil in all those schools, so far as I could learn, who could tell one note from another; that a large proportion of them took no part in the musical exercises, believing that they had no ear, and that they could not possibly learn to sing. To meet the case, we were obliged to go about the work in earnest; we spent considerable time upon a single note, with a view of catching every dull or obstinate ear; we learned the technics of the staff, the signs, characters, and their meaning; to perceive the difference between sounds, steps and half-steps, tones and semi-tones, and chords; at length we reached simple songs arranged in harmony of parts. By slow degrees we conquered the situation. Every obstinate ear was tested, assaulted, and forced to yield. In a few weeks there was not a scholar among them all who could not do the simple things just mentioned. Our only book—and, as I believe, the best of all—was the blackboard. I believe it far better than charts, because it affords better facility for changing the form of the exercise. The living thought expressed before the eye of the pupil serves to fix the mind upon the work.

In about six months from the beginning I went through all the schools and made an individual experiment with every pupil upon the subjects of color and sound. Among nearly six hundred tested, I found only one who was in any degree color-blind. This was a little girl about six years old, who did not readily distinguish more than two or three colors. In the matter of sound, the test was even more satisfactory. Instead of the hundreds who had once felt that they were the providential outcasts from all enjoyment of a delightful and refining art, there was not one who was unable to distinguish and imitate musical sounds—not one who, if I may use such a term, was *sound blind*.

A few there were who had not made desirable progress. This was due to their own incredulity and consequent lack of ambition at the outset, and want of attention to the first lessons. The interest in the study was, however, very general, and increasing at every lesson. Boys and girls were reading their music-lesson more accurately than they performed any other exercise in the school. This accuracy of eye, ear, and voice, together with the close attention required through the exercise, is just what renders it disciplinary in a high degree. All the parts of harmony were well represented; the older boys had laid aside their unbelief, and were taking a strong hold upon the work. They had developed a bass-part, which with proper training might soon supply all the churches of the town. These results, however, were not the only ones, nor the greatest.

The sum total of enjoyment in school life was largely increased. The temper, character, and conduct of the schools were improved. I saw rough boys transformed into gentlemen; they had been troublesome in school; had chafed under restraint; order and study had been irksome to them. Music proved to them most needful medicine. They became leaders of the class in this branch, and better scholars in every other.

I have now stated facts, as they were revealed in an average community. I have taken the children and youth just as I found them. I believe that these facts will be repeated and verified just as far as we apply the proper tests in civilized society. From this, I argue that music is a universal gift to children, and that to ignore it in a system of education is a great wrong. It should not only be *allowed* in localities and schools where convenient, but it should be among the legal requirements of teachers.

N. E. Journal of Education.

FORMATION OF CHARACTER.

MARY R. ALLING.

MODERN thought has laid upon the teacher new responsibilities. In former times he might be satisfied if he taught his pupils the rudiments of knowledge contained in the few text-books used, and administered with due severity the one punishment for all offences. To-day, he may dismiss them from his conscience through no such simple means. Not to teach a few facts, but to lead out the whole train of intellectual powers; not to keep order by rod and ferule, but by awakened interest in study and intelligent self-control—this is now the common conception of a teacher's work.

But this never resting nineteenth century does not stop here. Already it has forced our leaders to swear allegiance to a still

harder task—the symmetrical development of character. Most of us but dimly comprehend what this means. We have vague ideas of a state where deformity has given place to beauty and discord to harmony; but the routes by which it is reached are described with such bewildering inconsistencies that none of us can be sure that any of them leads to the enchanted palace. Metaphysicians dream of a time when the mind may receive as accurate a diagnosis as the body; and when, by the combined efforts of physiologist and psychologist, they shall be able to state unerringly the cause and results of mental phenomena. When that dream is realized, the teacher may be able to determine the effects of birth and early environment, and hence to begin his work with some surety of not blundering.

Meanwhile, the teacher of the present cannot wait for the dawn of that Utopian day of the far future. He must needs work; and, whether he will or not under his hands character is being formed. The body will adjust itself to almost any externals, and assimilate nourishment from almost any form of food; so will the mind, and one is as easily stunted and diseased as the other. The teacher is bidden to form and nourish the mind, and, oftentimes, he fancies he has done it when he has used the means to that end provided by the subjects he teaches. The most nourishing food will not produce strong and healthy tissue in a body kept in foul air; neither will good, wholesome books alone form a fair character. What pure air is to the body, gracious manners in the teacher are to the mind of the child.

Character may be defined as the sum of tendencies, the aggregate of habits; and, in the formation of these, the sentiments bear no inferior part. Teachers often forget that the intellect and will are not the whole of man; that nine-tenths of his deeds are determined by feeling. That right feeling is produced by clear perceptions and logical judgments, is most true; but these very processes of perception and judgment are influenced by the atmosphere of sentiment that surrounds a teacher. Is he careful to see things exactly as they are; to admit no exaggerations in his premises; to distinguish between theory and fact; to state nothing as ultimate, that future investigation may prove but a first step? Is he this in class-room and out of it, in illustrating a reality of science, settling a question of behavior, or performing a business transaction? Then, and only then, may he be sure that his pupils will draw from him that nobleness which forbids untruthfulness and hasty judgments.

One teacher is cynical, and expresses it on all occasions, forgetting that a faithless heart never produced the deeds of a Howard or a Florence Nightingale—forgetting that there is no danger of his pupils failing to see the dark and craven side of life, and that there is great fear of their missing the perception of the lovely and heroic in human character. Another tells the last bit of social news, every unpleasant episode at school, and the innocent follies of girls and boys, with the false coloring of a true gossip. Is it any wonder that his pupils become one-sided and morbid, and lose that gracious courtesy which would blush to expose unnecessarily the faults of another? One is so afraid of not having his importance realized that he assumes dignities that do not belong to him, and criticises, with an air of righteous superiority, the work of every other teacher associated with him; yet he snubs his pupils for assumptions of dignity and conceit, unmindful that these are but reflections of himself. Another, who will tolerate in his pupils not even a suggestion of discourtesy, gives public censure for private faults; ridicules one for stupidity, another for shyness; declares a pupil has not studied the lesson when the failure at recitation is caused by his blind questions or sarcastic comments; and holds that youth beyond forgiveness who intimates that he may have made a mistake. A teacher forbids his pupils to speak at all to one another during a general exercise or a public recitation; but he talks the whole hour with superintendent or committee-man, criticising every performance, and discussing other matters. At school he enlarges on the great rudeness of even a necessary remark to a seat-mate while he may be talking; but, at the next lecture in town, he converses with a comrade half the time that the speaker is trying to entertain him.

These, and other innumerable ways, in which the manners of a teacher vary from those he demands of his pupils, make the atmosphere in which their minds develop. A teacher sometimes sees and sincerely regrets these incongruities; but, too often, he does not notice them at all, or excuses them because of his superior position. He forgets that not what he says, but what he does, shapes the sentiments of his pupils; and that the habits of thought formed in the present succession of days determine the adult character of every child in his presence.

There is a point beyond which a certain

tendency cannot be checked, the influence of an environment overcome. Habit may master the will and force one to drift, hopeless of change. A teacher who should foster in his pupils a habit of opium-eating would be promptly expelled from the school-room. Is he less culpable who leads them into modes of thought that lessen vigor and tone of mind, dull faith in ultimate good, and poison the spirit of self sacrifice? One does not more surely destroy power of endurance and usefulness than the other.

We teachers work too much on the impulse of the moment; we count too seldom the aggregate of our deeds; we too often forget that present satisfaction may bring future regret. Were we gifted with forethought, did we see the ultimate results of our acts, could we but silence the vanity and untruth of to-day—we should rarely display such discords between the actual and the ideal, never feel bitterness for past exertion of unwholesome influence, and our work would help our pupils toward that shining goal which is the hope of the future—symmetrical character.

N. Eng. Journal of Education.

THE BIG BOOTS.

GEORGE H COOMER.

THE ruins of that old country school-house yet remain, a deformity by the roadside, It had brick walls, and these are not entirely gone. A portion of the chimney, too, is still to be seen; while old foundation-stones, and bits of lath, and broken layers of mortar, make the place desolate and forbidding. The wet, spongy farm-lot in the rear, is no handsomer, nor the rude highway more attractive, than was the case forty years ago. It would seem as if country school-houses, like country grave-yards, were once begrudged the room required for them, and were hence pushed into the most uninviting places.

Even now, in sleep, I sometimes dream of my school-days there, and of the little boy with the big boots—the sorrowful little boy, whom none of us knew enough to make happy. Boys are not really more cruel than men, but their well of kindness lies deep, and they leap over it and run around it, without knowing how clear and sparkling its waters would be if drawn up.

I was a lad of eleven, the first and only winter of my attendance there. I am now more than fifty; and, in the review, that single winter seems as long to me as a dozen years. The incidents of youth have a consistency like that of pure gold, and the mind afterwards beats them out, so that they cover a very broad surface. Mr. Tanner, the master, I would know in a moment, were he to rise up before me now; and the fresh-looking girl at the desk in the corner; and the blue-eyed country beauty, whose seat was by the window; and the freckled boys, and boys with tow hair; the big boys on the back seat, and the little boys on the front bench by the stove; I would recognize them every one, could some psychological wonder bring them back to me again, with the looks that they have long since shed, atom by atom, on the road of life.

There was one little fellow about my own age, whom, on my first day at school, I remarked as having a thoughtful and somewhat troubled face, and to be poorly dressed.

It was a cold day in November, and, at recess, some of the boys put on their overcoats. One of them, who had a very handsome garment of the kind, on taking it down from its nail in the entry, observed beside it an old faded coat, belonging to some one else. This he rudely grasped, and, with a jeering, cruel air, and derisive whoop, exclaimed, "What rag is this?" At the same time he threw it across the small entry and out upon the stone step. Another kicked it as it fell; while a third caught it up and ran with it, as if it were a kite or a banner. Presently, however, it was dropped; and, as the boys became somewhat scattered, I saw the little fellow of the reflective face hastily pick up the despised article and return it to the place where it had hung. As he turned away his countenance was flushed, and he drew the back of his hand across his somewhat handsome eyes.

It was his coat, this was plain; and all my enjoyment of the recess was spoiled; for I thought how he must feel to be jeered at and insulted for what he could not help, and what had no doubt caused him much anxiety and mortification, even before any one had made it a subject of ridicule. He did not put on the coat at that time, though he had worn it in the morning; but when the day was over, and all the children were making ready for home, as the bitter wind whistled past the door, he once more buttoned it around him; and I was glad to find that nothing was said, although some of the boys looked curiously at his threadbare attire, as if wondering how he could wear such clothes on the very first day of school. But I now observed that he had ill-fitting boots, much too large for his feet; and, although the coat escaped attack for the time, the boots did not.

"Boots! boots!" "What is the price of old leather?" "Who wants to take a sail in a mud-scow?" were some of the unfeeling ejaculations that he was compelled to hear, as he started out upon the road with the others, who, after the manner of rude school-boys, sauntered or ran along, pushing each other into ditches, or throwing pebbles at gate-posts and trees.

The following day was still colder, and the boy came wrapped in his poor overcoat; but this had now ceased to attract particular attention; the big boots, which really made a remarkable appearance upon feet so small, becoming the butt instead. They made a louder sound on the school-house floor than the boots of any other boy; and the sensitive heart of young Master Robert Brown (for this was the lad's name), told him so. There were enough others to tell him so, too. Oh, the cruelty of those sarcastic smiles and impudent glances!

One evening I told my parents of the boy with the big boots, who came from the other end of the district; and my mother replied that Robert Brown must be the son of that Mr. Brown who lived at the turn of the road, two miles off; and who, by intemperance, kept his whole family in misery. Mrs. Brown, my mother said, was an excellent woman, and was always mending and fixing up her children's clothing; trying, in her careful, anxious way, to make something of

nothing; and often, too, succeeding surprisingly well. Robert, she added, had an elder brother, who had gone to sea: and perhaps the big boots might be a pair which he had left at home. The family had lately lost a little girl, Robert's sister, and were in affliction every way; and she hoped that I would never show by word or look that I noticed the clumsy boots or the threadbare coat.

And now I remembered hearing Robert say to himself, sobbingly, one day when the big boys had treated him ill, "O little Mamie! little Mamie! I am glad you cannot know of it!"

One day, not long after the commencement of the school, two of the committee called upon some business with the teacher; and at recess some of the boys maliciously remarked that they had observed these officials smiling at Robert's big boots, as he stood in his class or shuffled along the floor. This was not true, but it had its effect. The idea that grown-up men could regard him with derision for his patched jacket and his poor, clumsy boots, seemed to impress him with a feeling more forlorn than aught else had done. How many leaden thoughts fell on his young heart! He recalled his father, a drunkard; his mother, so careful, so sorrowful, so worn with work, so tender of himself; his little sister, asleep under the new mound, where his own and his mother's hands placed, every week, sad mosses and circlets of the pretty creeping-jenny—for it was all that they now could do; and then, in the midst of all, how inexpressibly dreadful to his mind seemed the taunts which poverty brought upon him. The coat upon which his mother had sewed at night, hoping that it might answer; the boots that she had dreaded to ask him to wear; the coarse dinner that the boys had made fun of at noon, as he took it from his pail; he thought of all these things more bitterly than ever; and, suddenly, at that recess, he was missed from among his school-fellows.

I found him stretched at full length on the damp ground, out of sight of his tormentors; and when I knelt by his side, and put my arm tenderly about him, his sobs were violent. He cried long and bitterly—all the more for this sympathy, so precious, so unexpected. Presently, a number of school-boy faces peered over the fence that had hidden us from the common view; but after a moment's watching, they slunk away in shame. I soon perceived that my schoolmates were talking earnestly among themselves, and saw also that some of the faces I had thought so cruel wore a look of repentance and sorrow.

The teacher's bell sounded, and we all thronged into school—Robert Brown the last. How sad he looked! The master asked no questions; but he must previously have observed something of the condition of things; for when school was over at night, he put his arm about Robert's neck, and asked him to remain for a few moments. Robert held me by the hand, and asked that I might remain also.

Then, when we three were alone, he told, at the master's request, the story of his troubles. How simply and how frankly he spoke, and what unstudied pathos there was in his words! The schoolmaster's eyes were full of tears; and in answering the poor little boy, his voice became choked, and more than once he left a sentence unfinished. As to myself, I could not help weeping outright.

The next day, Robert was absent. He had taken cold while he lay on the wet ground, and as the weather was now stormy, his mother had not ventured to send him. His absence afforded the master an opportunity of talking to the other pupils in a way which he could hardly have done had the little boy with the big boots been present.

My schoolfellows had, however, already begun to think—begun to put themselves in Robert's place, and imagine how they would feel if their mothers, who so loved them, were poor and careworn, and sat up at night, trying to make old things answer for their dear boys, hoping that the other boys would not notice the difference, or at least would not speak of it—to consider how it would be if, when they came to school, all this anxiety and toil and love were mocked by unfeeling voices, and all the dear things of home were insulted, through a senseless derision, by those who had the good fortune to possess parents who could buy them new coats, new mittens, and new boots. There is almost everything in thinking, and at last the boys thought.

Master Tanner spoke kindly to them on the subject. Though he could be stern at times, there was now not one atom of severity in his tones. His heart had no room for anger; but, as he spoke, he became eloquent. It was a soft, winning kind of eloquence; and the most thoughtless boy in the school was visibly affected—many of them to tears.

Whether or not Robert's mother knew what had transpired, I cannot tell; but the succeeding day he came again, wearing the same coat and boots as before. But the boys saw them not, or saw them only to feel a heartache, and a new-born sympathy for the poor little fellow who would not have worn them if he could have helped it. The tide of impulse had turned. Nothing was overdone, but there was a kindness of act and tone; and the big boys showed that they were doing what they could, in a gentle, unobtrusive way, to make Robert forget that they had ever treated him ill.

The next day was Saturday, and there was no school. On Monday, Robert did not come, and we learned that he was ill with a fever. Tuesday was Christmas; and on the morning of that day, Mrs. Brown carried into the sick-room of her little boy a new pair of boots, and a complete suit of warm, handsome clothing, overcoat and all. Late on the previous evening, these articles had been left in her charge, to be a morning's surprise for the young patient.

That afternoon, a number of the school-boys called upon him, and I was of the party. The same boy who had tossed Robert's coat from its nail in the entry was one of us. Robert sat up in bed, and for a few moments all his illness seemed to have departed. The new boots were where he could look at them; the overcoat was also close to his hand, and so were all the other articles of the Christmas gift. The young visitors had seen all these things before Robert saw them, but they did not say so.

Oh, how unexpected had been such a token of sympathy! Nothing was said of the past; but the boys brought him nuts and sweetmeats, which, however, he must keep till he should be well; and they told him of a hundred things which he and they would do before the close of winter. But the well day never came. He was very sick, even then: and it was only the pleasant excitement, and the feeling that the old cause of sorrow had been all swallowed up in kindness, that made him appear momentarily better.

Only once after that I saw him alive; and the picture of his little pale face upon the pillow remains with me yet. His mother had placed the new boots where he could still see them, and the overcoat where

he could touch it with his hand. When I entered, he rallied for a moment, and seemed almost well. Putting his arm about me as I leaned over him, he said—

"I have seen little Mamie. She was here last night. I saw her just as she used to be. The school-boys—they didn't mean any harm, did they? only they didn't think. They like me now, and I like them."

And then he said something more of little sister, and something of getting well; but presently he seemed exhausted and partly lost. I cried softly to myself, for I could not help it.

The day following we heard that he was no more. All the school-children were at the funeral. Master Tanner was there too. The undertaker opened the little casket that held the dead, and we all came softly and looked down upon the white face. All the past came back—the scene with the overcoat in the entry, the jeers at the big boots, the distress of the poor little boy as he flung himself upon the damp sward—all these things were remembered. And now, how pale and still he was! No wonder that the school-boys cried; no wonder that the master's face was wet with tears.

It was, as I have said, more than forty years ago; but in an old burial-ground, not far away, I could point out to my readers a small white stone, with Robert's name and age, and by its side another stone, inscribed to "Little Mamie." They were placed there by Robert's sailor brother, who, the same winter, returned from a long sea-voyage.

How often I look at these small memorials, and go back in spirit to the old school-house and that bleak November day, when the poor threadbare overcoat was flung contemptuously from its nail, and little Robert, in his ill-fitting boots, went, with a heart full of bitter distress, to pick up and replace that which he knew his mother had taken such care to brush and mend.

O dear little boy! how long the scene has been over—the cruelty, the heartache, the tears! But a lesson was learned at that winter term of the country school which reached away down into the lives of all the surviving actors in that small drama of the past.

Youth's Companion.

RANDOM NOTES ON MUSIC.

IN view of the proficiency in music of the public school children in most of our large cities, it is a little surprising to learn that so many public players and singers are unable to read at sight the music they perform, but have to con it over as a child commits to memory a piece for declamation. Children learn to read music as easily as to read the printed page of their text-book. On finishing the Second Reader they are able to sing one-part music at sight. Fourth Reader pupils are equal to the performance of two-part music; upon completing the common English branches, they sing at sight music of some difficulty arranged in three parts, and as soon as the boys' voices have changed, the full quartette is performed. For such work in music, however, it is necessary to have boys and girls united in the musical exercises, and to make a special arrangement of songs in three parts, as the lowest part is not a genuine bass. The importance of correct instruction in vocal music can not be over-estimated. Some time must be spent each day in singing in every school-room, and it is for the management to decide whether it shall be fruitless rote-singing, or vocal music correctly learned and artistically rendered. The latter species of music is more than an accomplishment, it is a necessity among civilized people; as much a source of pleasure in after-life, as it is a means of refinement and good discipline at school. No graded school should be without a graded course of vocal music. It is a mistake to suppose that only persons who are musical and versed in the science of music are competent to teach this branch. True, each school system should have at least one special teacher of music fully qualified for the position, but under such a superintendent it is not uncommon to find the best results in the schools of teachers whose early musical education was neglected, and whose vocal power is next to naught. So wonderful are the results achieved by unmusical teachers of music, that superintendents of the branch are in the habit of insisting that there is no living human being of ordinary intelligence that can not teach music successfully, if he will only try to do it, and persevere in the trial.

THE music of church bells has become a matter of poetry. I remember, though somewhat imperfectly, a touching story connected with the church bells of a town in Italy, which had become famous all over Europe for their peculiar solemnity and sweetness. They were made by a young Italian artisan, and were his heart's pride. During the war the place was sacked, and the bells carried off, no one knew whither. After the tumult was over, the poor fellow returned to his work; but it had been the solace of his life to wander about at evening, and listen to the chime of his bells; and he grew dispirited and sick, and pined for them till he could no longer bear it, and left his home, determined to hear them once again before he died. He went from land to land, stopping in every village, till the hope that alone sustained him began to falter, and he knew, at last, that he was dying. He lay, one evening, in a boat that was slowly floating down the Rhine, almost insensible. and scarce expecting to see the sun rise again, that was now setting gloriously over the vine-covered hills of Germany. Presently, the vesper bells of a distant village began to ring, and as the chimes stole faintly over the river with the evening breeze, he started from his lethargy. He was not mistaken. It was the deep, solemn, heavenly music of his own bells; and the sounds that he had been thirsting for years to hear, were melting over the water. He leaned from the boat, with his ear close to the calm surface of the river, and listened. They rung out their hymn, and ceased; and he still lay motionless in his painful posture. His companion spoke to him, but he gave no answer; his spirit had followed the last sound of the vesper chime.—*Willis.*

ALL structures, large or small, simple or complex, have a definite rate of vibration depending on their material size and shape, as the fundamental note of a musical chord. At one time considerable annoyance was experienced in one of the mills in Lowell. Some days the mill was so shaken that a pail of water would be nearly emptied, while on other days all was quiet. Experiment proved it was only when the machinery was running at a certain rate that the building was disturbed. The simple remedy was in running it slower or faster, so as to put it out of tune with the building. We have here the reason of the rule observed by marching armies when they cross a bridge—viz., stop the music, break step, and open column, lest the measured cadence of a condensed mass of men should cause the bridge to vibrate be-

yond its sphere of cohesion. The Broughton bridge gave way beneath the measured tramp of only sixty men. Tyndall tells us that the Swiss muleteers tie up the bells of the mules, lest the tinkle bring an avalanche down. The breaking of a drinking glass by the human voice is a well attested fact, and Chlanni mentions an inn-keeper who frequently repeated the experiment for his guests.—*Lovering.*

THE worst specimens of musical incompetency which may be heard in drawing-rooms are due to the want of perception and the vanity of those who exhibit the specimens. There are many men and women who might sing or play agreeably if they would confine themselves to things within their powers; but vaulting ambition carries them pell mell into the dangers of difficult music which can only be encountered successfully after years of study and practice, and makes of the struggles, which, it is to be hoped, are more painful to their hearers than themselves, a terrible warning. When one has been present at one or two performances of this kind, he can understand the feelings of a professor of music who was gifted with a very tender conscience besides a great talent, and, being asked the reason of an unusual fit of gloom, replied: "Well, I am just thinking whether I ought to go on teaching these amateurs. They come and learn, but they understand nothing; and they mostly have voices like little cats." No less dreadful than the amateur who has no talent for music is he who has a good deal of talent and so much enthusiasm that his mind is incapable of taking thought for anything else.

THERE are, however, no more difficulties to be encountered in the study of music than in the study of language. The majority of people possess by nature vocal powers sufficient to sing a song of ordinary difficulty and compass, just as they possess vocal powers to read a book. In either case the difficulty consists in this, that the mind is not able to catch at sight the significance of the characters employed by the author or composer to represent his thoughts. But musical characters are no more difficult to read than words; there are no more notes or tones within the compass of the voice than letters in our alphabet. There are no more combinations of this musical alphabet, than there are of the alphabet of language, representing thousands of words, pronounced according to numerous rules with many exceptions; the pauses are not more difficult than points of punctuation; poetry has its rhythm as well as music. In fact, while the art of reading written language is not in all respects comparable with that of reading music, still a strong analogy will be found to exist between them.—*Teacher.*

HARMONIOUS words render ordinary ideas acceptable; less ordinary, pleasant; novel and ingenious ones, delightful. As pictures and statues, and living beauty, too, show better by music-light, so is poetry irradiated, vivified, glorified, and raised into immortal life by harmony.—*Landor.*

EDITORIAL DEPARTMENT.

THE SCHOOL JOURNAL.

LANCASTER, AUGUST, 1880.

J. P. WICKERSHAM. . . . . J. P. M'CASKEY.

BY direction of the President of the Republic, the Minister of Public Instruction in France has recently introduced into the Assembly the project of a law for establishing compulsory education. We propose to translate and in another number publish this proposed law.

THE papers read at the Superintendents' Convention at Harrisburg seem to have attracted the favorable attention of the press throughout the State. Quite a number of them have been republished in full, and the county newspapers generally have spoken of them in terms of commendation.

FRANCE has appointed delegates to the International Educational Congress soon to meet at Brussels, Belgium. Among them we notice the name of M. Buisson, the head of the French Commission to our own Exposition at Philadelphia, and well known in the United States. Is any one going from this country? It will be a great mistake not to be represented.

WE have been requested by M. Buls, Secretary-General of the International Educational Congress, about to assemble at Brussels, Belgium, to announce that the authors of standard school text-books are invited to send samples of their works to Mr. F. de Vien, Cantonal Inspector of Primary Education, 31 Rue de Prague, St. Gilles, Brussels. All books so forwarded will be exhibited during the sessions in one of the rooms of the Congress.

IT is proposed by nine New England colleges—Harvard, Yale, Brown, Amherst, Williams, Trinity, Boston University, Tufts, and Dartmouth—to modify the method of examinations, so that instead of each college holding its own, they may have a uniform examination on the same day for all the colleges. A meeting of representatives of each of the

colleges will soon be held to discuss, and if possible arrange, such a system. Would it not be wise for our Pennsylvania colleges to do something in this direction?

A TEACHER should own a copy of every text-book used in his school, for two reasons: (1) He needs to prepare his work. A teacher who does not make daily preparation for his lessons inevitably falls into "ruts" and becomes fossilized. (2) A teacher needs a book for reference at least, while hearing recitations, and he should not depend upon pupils for it. A pupil has a right to his own book in any recitation in which books are used, and the teacher has no business to deprive him of it and require him to share a book with his neighbor. *Indiana School Journal.*

THE Emperor of Germany, upon receiving a dispatch fom the Czar of Russia, announcing his escape from assassination, is said to have remarked: "It is no use for us to try to hold our places by force; we must depend upon education." If this is his true sentiment, he had better permit Bismarck to resign at once, for he now rules the German people with a rod of iron.

SAMUEL MARTIN, of Kennett Square, Chester county, died recently at an advanced age. He was for many years a teacher, and took a deep interest in all that related to the education of the young. Nearly up to the time of his death, he was an active member of the school board, and was always doing some good act for the benefit of the schools and the children; and his name will be green in the memory of the people of his section of the country for long years to come. Nor in dying did he forget the cause he had so much at heart during his life. He left property worth probably $25,000 in aid of a school for Friends which he recently founded in Kennett Square, and a codicil to his will gives $15,000 in trust, "the interest of which shall be used to defray in part the expenses of persons of limited means who are preparing to teach." All persons who are assisted by this bequest are to be educated at the West Chester State Normal School, and the trustees are required to "select only such persons as have proved themselves by actual experience in the school-room to be good teachers, or such as give promise of becoming good teachers." Henry P. Sharpless, George L. Maris and William M. Hayes are named as trustees under this trust. In this connection we desire to congratulate the West Chester Normal School upon its good fortune, and we hope the movement thus begun will strengthen and spread.

THE Irish *Teachers' Journal*, Dublin, seems to be not quite sure that the recent change in the administration of public affairs in England will be of benefit to the cause of education in Ireland. It says: "The administration of Lord Beaconsfield, we candidly and gratefully admit, has done a great deal for us in giving us the magnificent sum of £1,300,000 to form the basis of our pension scheme; and the promised £46,000 was another admission of the propriety of our claims. For these and other considerations we must say, on professional grounds, that a change in the government was not desirable to the teachers" But it adds: "The friends of teachers among the members of Parliament appear to have rapidly increased in every part of Ireland, and it will be our fault if we do not utilize their support in redressing our grievances and improving our position." Among those mentioned as the most active friends of education are Mr. Meldon, who has frequently spoken at teachers' meetings, the Lord Mayor of Dublin, Messrs. Brooks and Dawson, and Alderman Daly, of Cork.

PROF. EDWARD S. JOYNES, of the University of Tennessee, in an address at the Nashville Teachers' Centennial, May 7, 1880, points out what he considers the two great dangers in our educational progress, first, "that our education shall become too mechanical," and, second. "that it shall become too superficial." Of the first danger named he says: "Under the necessity for larger schools and larger classes, and hence, for the greater precision and perfection of the mechanical arrangements of organization, instruction and discipline, the danger is that the individuality of the pupil and of the teacher shall be merged and lost in *the machine*." These are wise words, and it might be added that nowhere else is the work of "the machine" so hurtful as in the work of education. That there is a tendency, also, towards superficiality in the work of education, must be evident to all careful observers. Hurry is the law of American life, and the school has not escaped and is not likely to escape its influence. And yet we all know that the human mind, over stimulated, pushed forward as in a hot-bed, is thereby weakened, and that knowledge crammed in haste into the mental stomach cannot be digested, lowers its tone, saps its strength, and eventually breeds dis-

ease. The human mind must be allowed time to grow, and to grow in its own way.

In an interesting address before the Philadelphia Social Science Association, in April last, on "Public Schools in their Relations to the Community," James S. Whitney, Esq., among many other significant statements, points out the fact that before the adoption of the public school system our *schools were unsuccessful.* This is contrary to the opinion of a few of our older men who remember these schools, but it is a truth that will be made evident to any one who will inquire into the history of the matter. The act of 1818 establishing public schools in the city of Philadelphia, and the act of 1834 establishing them in the State, were passed in view of the then uncontroverted fact that all previously existing laws had failed to make education general among the people, or to free the schools from many objectionable features. The preamble of the former act reads as follows: "Whereas, The general provisions of existing laws towards the establishment of schools throughout the State in such a manner that the poor may be taught gratis, have not proved to be a public benefit commensurate with the expense incurred by occasion of the same;" therefore, etc. This in itself settles the question so far as the Legislature is concerned, and we are abundantly satisfied that in every respect the public schools of to-day are far in advance of the schools fifty years ago.

Belgium is to celebrate in September next the fiftieth anniversary of her being an independent nation; then there is to assemble a great international teachers' convention at Brussels, and the teaching of the natural sciences is to have a high position, as told by the following announcement across the Atlantic:

"One of the most interesting features of the Congress will be the international competition in the production of the best and cheapest educational objects for the use of the primary schools, such as a collection of instruments, a portable chemical laboratory, a globe and projecting maps, historical tablets, and a book description of the physical, mechanical and chemical experiments performed with the simplest and cheapest instruments and materials, even such as are to be found in every house."

This is in the right direction. The whole world is coming to the conclusion that the natural sciences should be at once introduced into all public schools. When taught by experiments and visible objects, they are far more easy to be understood than arithmetic or grammar. They are most delightful and encouraging to the children. They are daily practiced, from the operations of the kitchen to the cultivation of the soil, and the work in every mechanic's shop. This semi-anniversary of an independent kingdom, with the assembling of educators from the surrounding nations, will do much to awaken attention through the whole world to the value of scientific instruction. J. E.

The official *Bulletin* of the Italian Minister of Public Instruction for February last contains an interesting account of the state of public education in Belgium. The matter would be admirably suited for a "Circular of Information," to be issued by the Bureau of Education. We suggest the propriety of doing it to the Commissioner. The statistics given show that the number of pupils in the public schools has fallen off very largely within the last year. In 1878 the number of pupils was 510,588, but in 1879 the number was reduced to 339,195. This was owing to the withdrawal of Catholic children from the schools, on account of the law secularizing them. Up to 1878 the Catholic religion was taught in the schools as a regular branch of instruction under State authority; but in 1879 the State withdrew its authority for religious instruction, and such instruction is no longer required. Instruction in religion may still be given in the schools, and it is very generally given; but it is not compulsory. If there is no objection, the teachers may impart religious instruction to a school as a whole; or if the school have both Protestant and Catholic pupils, a special time may be set apart for such instruction, and it may be given by clergymen of the different denominations. This is certainly fair to all parties, and a great step in advance for Belgium; but for the present the most bigoted of the Catholic priests are offended, and are making war on the public schools, and even excommunicating the teachers who conduct them.

This article gives a very full description of the industrial schools of Belgium, and closes by calling attention to the great World's Pedagogical Conference that is to assemble at Brussels the present summer.

Rev. F. S. Noble, in a recent address in Chicago, argued most forcibly that we must establish and maintain schools in the South

for self-protection. The following is a paragraph containing the pith of his argument:

In sixteen States of the Union upward of 75 per cent. of the children do not attend school, yet one-half of these are growing up to wield the ballot. In six of the States the majority of the voters can neither read nor write. The six electoral votes of Alabama have as much voice as the six electoral votes of an intelligent Northern State. The six votes of ignorant North Carolina have as much voice in Congress as the six votes of any other State. Can we say to the South that if they do not want schools, and enterprise, and thrift, and wealth, they can go without? The condition of those States affects the whole Union, our laws, our tariffs, our happiness, our safety. The speaker favored universal suffrage. A liberty dependent upon manhood was the safest. But ignorance was, nevertheless, a dangerous thing. The blind Samson of to-day is the ignorant negro with the ballot in his hand. The wielding of ignorant suffrage is a menace to the peace of the State. We do not put matches in the hands of children to play with near haymows. The man who wields the ballot should have education to properly wield that ballot. The voter should be educated, whether he be black or white.

The London *Educational Times* regrets that the losses to the educational interests of the country by the late elections are greater than the gains. It laments the loss of Sir John Lubbock, Sir Sydney Waterlow, and Mr. Arthur Mills, all staunch friends of education. To counterbalance this loss, however, Sir Charles Reed, President of the London School Board, has been returned for St. Ives, Cornwall, and Hon. Lyulph Stanley for Oldham. The *Times* adds:

It is to be hoped that the programme of the Liberals, which is sufficiently vague as yet, may include something practical in the interests of education. We are a patient class; we have only just found out that we want things done for us; we have only just begun the well-known methods of conferences, meetings, papers, petitions, and the other time-honored machinery of agitation. We do not threaten to strike, if our demands are not immediately granted; but we have begun to work in our quiet way; we have secured the attention of a good many Members of Parliament; and, if we see with sorrow some of our friends turned out, we shall not lose heart, but shall go on to interest others, until we are strong enough to carry those peaceful points which are not already granted solely because they are not yet understood.

We have received, through the National Bureau of Education, programmes of the International Educational Congress which is to be held at Brussels, Belgium, August 22–29. The object of the Congress is stated to be "to explain and popularize the social and educational questions relating to all grades of instruction." The Congress pursues this aim by means of discussions and the publication of its transactions. It acts as a commission of inquiry, to which any facts and ideas may first be presented and afterwards criticised. The Congress seeks the truth, it does not impose it. It discusses and explains, it does not command

The Congress will be divided into six sections as follows:

1. Crèches, kindergarten, infant schools, primary instruction.
2. Secondary instruction.
3. Superior instruction.
4. Instruction in special subjects, professional, technical, agricultural, and commercial.
5. Popular instruction: lecture courses, conventions, libraries, museums, and societies for the promotion of knowledge.
6. School hygiene.

Speakers can use any tongue they prefer, and the substance of all addresses in other than the French language will be translated. Any individual, corporation, or body, can become a member and secure the published proceedings for 20 francs. General and special meetings are provided for after the manner of our own National Educational Association.

The questions proposed for discussion are very significant, as showing the condition of education in Europe, and the drift of educational thought. Out of the large number contained in the programme we select a few as specimens.

1. What purpose ought the legislature to have in view in elaborating a course of primary instruction?
2. What is the duty of the primary school as regards the political education of the people?
3. How ought school museums to be organized?
4. Does the instruction of girls require a special regime and a special programme?
5. What ought the course of study in a Normal School to be?
6. How many hours a day should children be in school?
7. How should school excursions be arranged?
8. What is the best organization for industrial schools?
9. What is the best system of organizing workingmen's societies?
10. What is the best method of teaching languages, ancient and modern?
11. Should the granting of academic degrees be regulated by law?

ESTHETICS IN OUR PRIMARY SCHOOLS.

The following article recently appeared in the *Evening Dispatch*, York, Pa. It opens up a very interesting subject. The primary schools in some of our cities and towns are greatly neglected in all that relates to good taste. The buildings and furniture are uninviting, there is nothing cheerful or attractive about the grounds, not a beautiful object, a flower or a picture adorns the

school-room, the children's dress and manners show that whatever the teacher may have done for them, these have been overlooked. We are glad that York, under the lead of her wide-awake Superintendent, is coming to the front in the matter of esthetic culture in her schools, as well as many other progressive measures.

The subject of esthetics is one which has received the attention of profound thinkers of all ages, but it is only recently that esthetics in the school room are considered necessary to the cultivation of all the finer faculties of the mind and soul. Our primary teachers, however, have had their whole theory thoroughly impregnated with this fact, by the normal lectures delivered weekly during six months of the year, by Prof. W. H. Shelley, Borough Superintendent. The results are widely visible. Comfort always presupposes the beautiful in the school-room, and as the rooms are generally large and bright, ventilation and heat are carefully regulated, and the sunshine is always welcomed with wide, clear windows, so that our boys and girls may grow strong and vigorous in God's pure air and sky-light.

Order and cleanliness are essentially esthetic, and are persistently enforced. The smallest children have quickly learned that fresh, clean hands and faces and well-combed hair are sure to win the teacher's smile of approval, and with this idea farther impressed, we find them carefully anxious to keep their desks unmarred and in order, and the floor as clean as possible. During the muddy months of the past winter, we have known the boys vie with each other, as to which shall wear the cleanest shoes in the school room; and it was really quite enjoyable to see the sturdy little fellows scraping the mud so vigorously from their shoes before entering the room.

EDUCATION ABROAD.

NETHERLANDS.

THE association for the promotion of unsectarian education counts at present 413 local committees. The collections last year in aid of existing schools amounted to 40,371 florins, about $20,000.

RUSSIA.

The Russian Minister of Public Instruction has decreed that no university under his jurisdiction shall henceforth admit a student who is married, and that students who get married after matriculation shall be expelled.

BELGIUM.

According to the Statistical Year Book the number of teachers has increased by 4472 during the last twenty-five years, and the expenses for elementary education during the same period have increased 638 per cent. In 1847, 16,000 recruits could neither read nor write, and in 1870 there were only 9,460. The number of recruits who could read and write in 1847 was only 12,297; in 1879 the number was 22,271.

CO-EDUCATION IN ITALY.

The Bureau of Education is informed that "the comprehensive scheme announced last year in Italy by De Sanctis, of founding schools for girls of the same order as the Lyceum for boys, giving, in short, parallel systems of higher education for both sexes, has fallen to the ground for the present, owing partly to want of funds in the impoverished condition of many of the municipalities, and still more from lack of a sufficient number of scholars. It is probable that the project was premature, the ordinary school education not being as yet sufficiently spread to create the want, or indeed the capacity, for more advanced study. With a few, however, these exist, and their case has been met with characteristic Italian simplicity by admitting a few girls here and there to the Lyceum classes with the boys, where they are studying Greek and Latin with great success, and earning distinction in their classes. Thus, in a country which would seem utterly unprepared for the bold experiment of mixed education at the ages of 13 to 15, where public opinion, if consulted, would most likely have pronounced decidedly, if not violently, against it, the experiment has been quietly tried, and has succeeded. In some cases two girls only have joined the classes, in others three or four, and their presence has created no more disturbance there than that of the young women, who also, in very small numbers, have attended the university classes in Rome and Bologna."

GERMAN UNIVERSITIES.

Statistics of German universities in summer of 1880, showing the number in faculty and attendance:

Universities.	*No. of Professors.*	*No. of Students.*
Berlin	219	5,201
Bonn	117	987
Breslau	108	1,324
Erlangen	63	481
Freiburg	56	459
Giessen	58	361
Gottingen	116	974
Greifswald	62	536
Halle	102	1,130
Heidelberg	107	532
Jena	77	481
Kiel	64	347
Konigsberg	85	745
Leipsic	206	3,345
Marburg	71	568
Munich	132	1,840
Munster (academy)	32	253
Rostock	41	198

Strasburg	86	814
Tubingen	83	1,094
Wurzburg	76	907

The following are the statistics of Universities outside of Germany:

SWITZERLAND.

Universities.	*No. of Professors.*	*No. of Students.*
Basle	71	302
Berne	89	429
Zurich	85	372

RUSSIA.

Dorpat	79	1,069

AUSTRO-HUNGARY.

Czernowitz	38	259
Grap	75	819
Innspruck	73	607
Prague	143	1,707
Vienna	258	3,885

EDUCATION FOR THE COLORED PEOPLE OF THE SOUTH.

THE trustees of the Peabody Education Fund, at their recent meeting in Washington, passed the following resolution:

Resolved, That it is expedient that this Board should present a memorial to Congress, praying that it may grant such aid as may be required to secure to the colored population of the Southern States the education which is necessary to fit them for the discharge of their duties as citizens of the United States.

The memorial referred to in the resolution has been presented to Congress, and is printed in pamphlet form. It is an able argument, and we do not see how Congress can resist the appeal made in behalf of the colored people. The memorial sets out by showing that the Fathers of the Republic, Washington, Adams, Jefferson, Madison, Monroe, held that a general diffusion of knowledge among the people is necessary to preserve free institutions. The opinion of all is expressed by Jefferson in this sentence: "If a nation expects to be ignorant and free, it expects what never will be." It follows that some means must be found for educating the five millions of colored people recently emancipated and endowed with all the rights and privileges of citizenship. The danger that threatens the nation from the vast increase of ignorant voters is thus pointed out in the memorial:

"We are thus compelled to face the fact that more than half a million of voters, scattered over half the Union, from illiteracy are notoriously incompetent to the intelligent discharge of the public duties intrusted to them. This large class of uneducated voters, it must be remembered, are not merely citizens and voters of the States in which they respectively reside; they are also citizens of the United States. The power which they wield and the influence which they exert is not merely local; it is co-extensive with the Union. Their votes may decide the issues of peace or war; they may control presidential elections, and give shape to the policy of the nation; they are entitled to participate in the election of President and Vice President, of members of the House of Representatives, and of the State Legislatures which choose Senators of the United States; they elect governors and legislators of their respective States, and in many States, judges, clerks, sheriffs, supervisors, magistrates, and almost every officer intrusted with administration of public affairs; they are themselves eligible to all positions of honor, trust, and emolument, and legally competent to act as judges or to sit as jurors in casesinvolving the most sacred rights of life, liberty and property."

The Memorialists, while holding that education is the best remedy that can be applied to protect the nation against the evils of ignorance that threaten its welfare, do not ask that the general government shall assume any control over the work of education in the States; they simply ask aid to help the States perform it. The States of the South, it is held, are very poor, and their industries sadly crippled. Their loss during the decade commencing in 1860 was nearly $2,000,000,000. They are trying to establish free schools, but in addition to the white children to be educated, they have the colored children to provide for, and the burden is greater than they can bear. The Memorialists petition Congress for the needed assistance, and suggest that the proceeds of the public lands might properly be set apart for that purpose.

THE INDUSTRIAL SCHOOLS FOR GIRLS IN PARIS.

FRANCE was the first country in which any organized training was given to girls. The industrial census in 1860 showed that in Paris alone there were 367 workwomen to every 1,000 workmen, women being employed, however, in the lower and least paid strata of industry. In 1862 a society "pour l'instruction professionelle des femmes" was formed by Mme. Lemonnier, who opened a small school with only five pupils. By the end of the first year this number had increased to forty, and became self-supporting; and there are now two hundred scholars in the parent institution, and

four branches have been established, teaching yearly from six hundred to seven hundred pupils. The girls must be over twelve years of age, and pay from eight to twelve francs a month school fees. They receive a good general education, and special classes in wood engraving; painting on porcelain and ivory, fans and blinds; a commercial course, fitting them to be clerks and bookkeepers. Drawing and industrial design, needlework and dressmaking, the manufacture of jewelry and of articles de Paris, are likewise taught. The pupils find no difficulty in obtaining situations after leaving the schools. There are a great number of similar schools in Paris, as well as in the provinces. Seven new schools of design have just been opened for girls by the Paris municipality. A school for silk weaving belongs to M. Hamelin in Paris, with branches at Lyons and St. Etienne. The Atelier Theoretique et Pratique de Typographie in Paris is said to turn out yearly several hundred women printers; goldsmiths and jewelers, watchmakers and workers in metals, have established schools for young women. The Gobelins manufactory educates the girls who are employed in the execution of the tapestry, and the china manufactory at Sevres also has a large number of girl pupils. There is a school for cookery at Vitzy-sur-Seine, which turns out excellent cooks; and at Nantes the municipality established some years ago an art and industrial school for young women. Private industrial schools are equally numerous in the French capital; among them we may mention the "Ecole Professionelle Pratique," started by some ladies in 1871, and the school founded by Mme. de Montizor in the Rue de la Seine, where girls receive instruction in drawing and painting on wood, pottery, glass and china, in wood and copper engraving, modeling and designing for lace, fans, jewels, stuffs, wall papers, etc.

NEED OF HIGHER EDUCATION.

IN a recent number of the New England *Journal of Education*, a strong editorial calls attention to the need of higher education. The fact is mentioned that all civilized nations, both in ancient and modern times, have established at the public expense colleges and universities, or institutions equivalent to them. In a monarchy or an oligarchy, the liberal education of the few, the ruling class, is a necessity. In Europe, even at the present time, the provision made for higher education is that of which they have most reason to be proud. Germany, Italy, France, England, make most generous expenditures to support their secondary and superior schools. Their theory still is that there must exist in a nation a highly educated class to rule, and a larger class with sufficient education to fit them for their sphere in life, to farm the land, to work in the shops, to fight in the ranks of the armies. Like a monarchy, a republic needs higher education to prepare a class of citizens for managing the affairs of the State; but unlike a monarchy, a republic must have universal education, in order that all, the poor and low, as well as the rich and high, may be prepared for the duties of citizenship, and have a fair chance to rise to whatever place in the social and political scale God gave them talents to occupy.

The following are the most pointed paragraphs of the article alluded to:

There is a refining element at work in all the grades. We find our children (rough and boisterous by nature or lack of training) learning to close the doors quietly, to walk lightly across the floor, to stand and sit erect, to handle books and slates with the least confusion, and best of all, to speak and act politely. A little boy with ragged shoes and shabby clothes, in passing his teacher on the street, raises his hat to her, but the lookers-on never notice the worn-out clothes in judging the little gentleman.

Esthetics, in its more limited sense, considers only the beautiful that affects the eye and ear; but this is no more neglected than the minor details, though the minor details are really of the greatest importance, as our schools are almost entirely disciplined and governed by appeals to the good and true in the child's nature. It is very hard to teach little children to modulate their voices, and the teachers are continually devising new ways and means to cultivate clear, pleasant and distinct utterance; the result is a general improvement in the vocal exercises of all our schools—the low voiced, timid children are taught to speak distinctly, and the loud, shrill voices are softened and modulated. The concert exercises occasionally employed, serve to harmonize the voices, the word drills cultivate distinct utterance, and the scale drills serve to develop true, musical tones, so that when the children sing, there is a sweetness and unity greatly to be desired.

As to training the eyes, any number of beautiful objects are brought to decorate the rooms, suggestive pictures on the walls give the foundation for numberless bright stories for the imaginative little ones; flowers in the sunny windows, vines trailing from hidden bottles, and the children's own work on the blackboard—all these we find in our school rooms, as studies for the bright eyes and active minds, by which the hearts of our children may be brought to love the beautiful in nature and to reverence nature's God, who has implanted in every heart a love of the beautiful as one of the guides to a higher life.

It is of the highest interest to every State that its professional classes should not be of that narrow, untrained sort, which is always found when uneducated youth rush upon the study and practice of the Law, Medicine, Divinity, and Instruction. There is no

greater blessing to a country than a class of superior lawyers, doctors, ministers, teachers, and journalists; and no greater blight upon public advancement than pretentious, ignorant bunglers in these posts of honor. To insure this, every Christian State has thought it wise to offer its aid—if not for the means of professional training, at least for that general superior culture of the whole man which makes the chief difference between those who assume the honors and duties of professional life.

A republic, especially, needs a strong and numerous body of well-informed and reliable men and women, who shall stand in all social and public affairs between the great multitudes at the bottom, and the few ambitious, powerful and magnetic men who always seek to rule the Commonwealth. A State without such a class speedily comes to an end of republicanism, and closes up into a despotism. Now, this middle class, which is the very soul of a free State, can only be developed from the masses; and only where there is a public provision for the superior education of all who have the pith and persistence to take it, has it ever been found. Why cannot New England be dominated, like Ireland or Spain, by a succession of brilliant demagogues, each good for a revolution? Because New England, in a larger degree than any other group of States, has made that public provision for the training of the superior middle class of society, which is the keystone of the arch in a republic.

And even greater is the need, in a republican State that there should be a numerous body of well educated and well-trained women. It is the commonplace of every debating society, that the mothers rule the nation. The mother who gives birth to, cherishes and rears the boy, teaches him to talk, to use his faculties, to think, worship, act in practical affairs, and, generally, is nearest him till he is ten years old, is a power in the State that no other person can possibly become. Now, everybody knows that a nation full of ignorant, vulgar, untrained women, must remain a nation of subjects to some imperial or ecclesiastical power. And everybody may know, who will study history with open eyes, that a nation whose women are educated by an infallible priesthood becomes a nation rent with the desperate struggle between free thought and a church that never changes in its attitude to mankind. The most powerful, though perhaps the least noticeable result of our American system of free secondary education, is the constant elevation from the masses of a growing class of well-trained, thoughtful, patriotic Christian women, who prevent more evil in the republic than all the statesmen, and set in motion so many of the ideas and ideals that shape the policy of Senates and Presidents.

NORMAL SCHOOL EXAMINATIONS.

QUESTIONS AT MILLERSVILLE.

THE series of Normal school examinations which commenced at Kutztown, May 31, closed at Millersville, July 8. The State Superintenent and Deputy Superintendent Houck attended all of them, this duty requiring their whole time for six weeks. The work was very severe and wearing.

The number of students who passed the examinations at the several schools was 265, as follows: Kutztown, 21; Edinboro, 23; Mansfield, 30; West Chester, 14; Bloomsburg, 33; Lock Haven, 44; Shippensburg, 19; California, 26; Indiana, 18, and Millersville, 37. They constitute as a whole a fine body of educated ladies and gentlemen. A few of those presented at some of the schools were unable to reach the standard adopted by the Board of Examiners, and were consequently rejected, and there was a tail end to nearly all the classes, that barely escaped being cut off. The "weak ones," however, were fewer in number than at any previous examination, and it seems to be the determination of the faculties of the several schools to have none at all next year.

In order that all interested may see the character of the examination which must be passed in order to graduate at one of our Normal schools in the lowest, or *elementary course*, we present below the questions asked at Millersville. They are about a fair specimen of the questions used at the other schools. The list was prepared with no expectation of publication, and we are indebted for it to the enterprise of the Lancaster papers. The Board of Examiners at Millersville were Superintendent Wickersham, Deputy Superintendent Henry Houck, Professor W. H. Shelley, Borough Superintendent of York; Professor B. G. Ames, Borough Superintendent of Columbia; Professor D. J. Waller, Principal of Bloomsburg State Normal School. Each of these gentlemen, as will be seen, did a share of the work. The examination was mainly written, but in some cases it was supplemented by an oral examination.

MENTAL PHILOSOPHY—DR. WICKERSHAM.

1. Prove that the *consciousness* is not a distinct faculty.

2. Give what you consider the most plausible theory of *perception*.

3. To what limitations is all knowledge derived from the senses subject?

4. What is the difference between a necessary and a contingent truth?

5. Run the line between the brute and the human intellect, showing wherein they differ.

6. Analyze the *Conscience*, showing in what respect it belongs to the *Intellect*, and in what respect to the *Sensibilities*.

7. Account for the idea of cause.

METHODS OF INSTRUCTION—DR. WICKERSHAM.

1. On what grounds may it be claimed that education is a science?

2. Prove that the mind has two sources of knowledge and define the products.

3. What can education do for a human being, and what can it not do?

4. In teaching a branch of learning, of what ad-

vantage is it to know how the knowledge we have of it was acquired?

5. Name the order in which an empirical science should be taught from the first steps to the last.

6. Under what circumstances is it proper to begin teaching a branch of instruction with general definitions?

7. Indicate a series of lessons in teaching language, including speaking, reading, composing, grammar, etc.

SCHOOL ECONOMY—DR. WICKERSHAM.

1. What should be taught in a primary school, and why?

2. Is it just to compel a citizen who has no children to pay taxes to support schools; and if so, on what grounds?

3. Give a list of proper incentives to study.

4. How may the various methods of learning from nature differ from the method of learning from text-books?

5. Give an example of the Socratic method of imparting instruction.

6. What is the difference between proving knowledge and testing knowledge?

7. What principle should govern the administration of rewards and punishments in a school?

NATURAL SCIENCES—PROF. AMES.

I. PHYSIOLOGY: 1. What are the four principal elements of organized bodies?

2. Explain the construction of the joints.

3. Name the divisions and valves of the heart, and give the special use of each of the valves.

4. Name the fluids of digestion, and the organ or organs by which each fluid is secreted.

5. What important operations are performed in the capillaries? What relation do the capillaries bear to the arteries and veins?

6. What difference in the functions of the lymphatics and the lacteals?

7. Name the respiratory organs, and describe the lungs.

8. What distinction in the functions of the cerebrum and the cerebellum?

9. In how many minutes will 50 pupils vitiate the air in an unventilated room 25 feet square and 12 feet high?

10. What is the composition of pure air?

II. NATURAL PHILOSOPHY: 1. What forces act between molecules.

2. What space will a body, falling freely, pass through in the tenth second?

3. Name and describe the forces which produce circular motion.

4. Give the law of equilibrium for the power and weight in each of the following machines: The lever, the wheel and-axle, the pulley, the inclined plane, the screw.

5. What are artesian wells, and upon what principle do their phenomena depend?

6. Give the velocity of light and of sound.

7. What is reflected light, and what is the law of reflection?

8. What is meant by the refraction of light? Give the law of refraction.

9. To what extent will water expand in passing from its greatest density to steam?

10. What is the principal focus of a convex lens?

III. BOTANY. 1. Define *plant*, and tell the difference between a plant and an animal or a mineral, and tell how a plant is affected by cultivation.

2. Define the two grand divisions of the vegetable kingdom—the Phænogamia and the Cryptogamia; and tell how they are distinguished.

3. Define *root*, and tell its office to the plant. Describe the different forms.

4. Define *stem*, and tell wherein it differs from the root.

5. Define *digestion* in plants, where and how is it performed?

WRITTEN ARITHMETIC—PROF. SHELLEY.

1. What is the advantage of the metric system of weights and measures? Illustrate the system briefly.

2. Explain and illustrate stocks.

3. Explain partnership with time.

4. Explain compound proportion.

5. Explain division of decimals.

6. Explain partial payments.

7. Bought 75 yards of cloth at ten per cent. less than first cost, and sold them at ten per cent. more than first cost; gained $25. What was the first cost per yard?

8. What will be the face of a 30-day draft purchased for $1,500, if the rate of exchange be ⅛ per cent. premium, and the rate of discount be 6 per cent?

9. A and B alone can do a piece of work in 15 and 18 days respectively. They work together for three days, when B leaves; but A continues, and after three days is joined by C. They finish the remainder in four days. In what time could C do the whole work?

ALGEBRA—PROF. SHELLEY.

1. Resolve the following into prime factors: $(a^{2n}-b^{2n})$; (a^4-1); (a^6-12a^3-13); $(x^4-2x^2-24$.

2. Given $b-\frac{1+x}{1-x}=0$, to find x.

3. Given $\frac{\sqrt{y}}{y}=\frac{y-ay}{\sqrt{y}}$ to find y.

4. Given $\sqrt{4x+1}-\sqrt{3}=\sqrt{12}$, to find x.

5. From $3y\sqrt{x}+\frac{2x^2}{y-1}-4x\sqrt{y}$ take $\sqrt{xy^2+4x^2y}$.

6. $\left\{\begin{matrix} x^2+4xy+4y^2=36 \\ x-2y=2 \end{matrix}\right\}$ to find x and y.

7. Find four geometrical means between 2 and 486.

8. Sold a watch for $171, and the per cent. gained was equal to the number of dollars the watch cost. What was the cost?

9. A square tract of land contains ¼ as many acres as there are rods in the fence enclosing it. What is the length of the fence?

10. Develop $(a^{\frac{1}{3}}-b^{\frac{1}{3}})^6$ by the Binomial Theorem.

11. Extract the square root of the following: $a^4-2a^3x-a^2x^2+2ax^3+x^4$.

12. $\sqrt{x+5+\sqrt{x+1}}=\sqrt{x+8}$, to find x.

13. $\sqrt{21-12\sqrt{3}}$; find the square root.

GEOMETRY—PROF. SHELLEY.

1. Prove the area of the trapezoid.

2. Prove the sum of three angles of any triangle equals — what?

3. Prove the value of each interior angle of a regular decagon.

4. Prove the value of *Pi*.

5. If a : b : : c : d, prove that (a+b) : (a–b) : : (c+d) : (c–d).

6. Show how to find the centre of any circle.

7. Prove that the diagonals of a rhombus bisect each other at right angles.

8. How do you bisect a given angle?

9. Prove the square described on the hypothenuse equals — what?

10. Define *similar triangles, rhomboid;* and prove the area of a circle equal to the value of *Pi* into the square of the radius.

ORTHOGRAPHY—PROF. WALLER.

Eyeing, defensible, exhilaration, opacity, Britannia, hating, existence, interchangeable, inconsistency, correlate, inferring, indispensable, dissertation, preceding, analogous, ingenious, procedure, equivalence, squirrel, niece, Philip, opportunity, mackerel, sapphire, seize, siege, flippancy, propagate, Caribbean, hypocrisy, imagine, eel, fain.

ENGLISH GRAMMAR—PROF. WALLER.

1. Define a sentence, a clause, a phrase, a word, a letter, a punctuation mark, parsing, analysis, "Language Lessons" and grammar.

2. Write the following correctly, with special regard to capital letters, punctuation marks and the reason for them, and the equivalents of abbreviations;

a page of gibbons decline and fall of the roman empire was read by superintendent baer to hon J P Wickersham ll d when they were in paris.

3. Give the plural of *lady, valley, mouthful, antithesis, genus.* Compare *last, badly, wisely, polite, next.* Give the *principal parts of drink, flow, fly, sit, set.*

4. Write a compound sentence; change it to a complex; and again so as to contain a participial phrase.

5. Analyze the following, and parse the italicized words:

"*Cyriack*, this three years' *day* these eyes, though clear,
To outward view, of blemish or of spot,
Bereft of light, their seeing *have forgot;*
Nor to their idle orbs doth *sight* appear
Of sun, or moon, or star, throughout the year,
Or man, or *woman*."

RHETORIC—PROF. WALLER.

1. Wherein does rhetoric differ from grammar?

2. What do you include under the term *invention?*

3. What are the essential qualities of *style?*

4. Write half a page upon "Franklin," using the figures *hyperbole, metaphor, simile* and *metonymy.*

5. How can *energy* be secured?

6. Name four kinds of poetry, and show how it differs from prose.

ENGLISH LITERATURE—PROFESSOR WALLER.

1. About how old is English Literature said to be?

2. Name three writers between Chaucer and Elizabeth.

3. To what characteristics and works does Milton owe his prominence?

4. Who wrote: *Lycidas, Cato, Much Ado About Nothing, Village Blacksmith, Vicar of Wakefield, Spectator, Prisoner of Chillon, Guy Mannering, Tam O'Shanter, Robinson Crusoe.*

5. Thomas Gray lived when and where?

(*a*) Mention five facts in his personal character.

(*b*) Mention four of his contemporaries.

(*c*) Name any of his writings.

(*d*) What is an elegy?

LATIN—PROF. WALLER.

1. What people used the Latin language? Who wrote Cæsar, and what is it about?

2. Translate—*His rebus*[1] *adducti et auctoritate Orgetorigis permoti, constituerunt ea*[2], *quae ad proficiscendum*[3] *pertinerent, comparare; sementes quam maximas facere*[4], *ut in itinere*[5] *copia frumenti suppeteret*[6]. *Ad eas res*[7] *conficiendas*[8] *biennium sibi satis esse duxerunt.* Parse the numbered words.

GEOGRAPHY—PROF. HOUCK.

1. Describe six rivers in Pennsylvania.

2. Locate the following, and state for what each is noted: Altoona, Knoxville, Corry, Crimea, Como, Quito, Rhine, Minneapolis, Winchester, Leadville, Golden Gate, Thames, Apenines, West Point, Bradford, Milan, Leipsic.

3. Which State is the geographical centre of the United States?

4. Into what divisions may the United States be divided with reference to its drainage?

5. How do the United States and China compare in size and population?

6. Why are the Pacific slopes of Peru and Bolivia rainless?

HISTORY— PROF. HOUCK.

1. Give proofs that America was discovered prior to the arrival of Columbus.

2. Early settlement of four States—when, where by whom, from what motives?

3. What was the most important event of Jefferson's administration?

4. How was John Quincy Adams elected President?

5. Discuss these subjects: Tippecanoe, Paul Jones, Brownlow, Valley Forge, Lyons, Wayne, Thomas, 1755, Benton, Slidell, Clay.

6. Write one page on slavery.

CONSTITUTION—PROF. HOUCK.

1. Recite the preamble.

2. What is a constitution?

3. Describe the process of *naturalization.*

4. Explain the terms, *members at large, electoral college.*

5. Show the process by which a vetoed bill may become a law.

6. How are vacancies filled in the House of Representatives and Senate?

DRAWING—PROF. HOUCK.

1. Name, define, and draw the different triangles.

2. What is an ellipse? Draw one.

3. How do lines vanish when an object is situated either above or below the eye line?

4. How much time would you devote to drawing in an ungraded school?

5. Construct a hexagon, side two inches.

6. Draw a simple design in an equilateral triangle, suitable for dictation to a class of young children.

7. Inscribe a pentagon in a circle, diameter four inches.

In addition to the examination in the branches, the class spent between five and six hours in giving a practical exhibition of their skill in practical teaching. The classes of the Model School were used for this purpose.

HISTORY OF SUNDAY-SCHOOLS.

THE following letter contains some valuable facts concerning the history of Sunday-schools. We copy it from the Pittsburgh *Telegraph* of June 28th:

To the Editor of the Telegraph:

About twenty years ago two articles appeared in the *United Presbyterian Review*, then published in this city, in which the writer proved to a demonstration that Sabbath-schools existed, not only in Europe, but also in America, long prior to the time that Mr. Raikes commenced operations at Gloucester. In the *Free Church Magazine* for June, 1844, published at Edinburgh, Scotland, it is stated that "Sabbath-school teaching is of no recent origin in Scotland. The system of Sabbath-school teaching, through the instrumentality of 'readers,' was devised and employed by John Knox at the very beginning of the Reformation, and has always been, to some extent, practiced in Scotland ever since. Even as a modern system, it was not borrowed from England, (as some imagine), for schools were in existence at Glasgow and other places about the middle of the last century—both at an earlier date and on a better plan than Robert Raikes' experiment at Gloucester."

As early as the year 1647, the Commissioners of Universities represented to the General Assembly of the Church of Scotland that the overtures of 1643 "for the visitation of schools and the advancement of learning were very much neglected," whereupon it was recommended "to all universities to be careful to take account of their scholars on the Sabbath-day of the sermons and of their lessons on the Catechism."

In the year 1837, the Rev. John Brown, D. D., of Langton, Berwickshire, proved very clearly that a Sabbath-school was in existence at Norham, twenty-four years, at least, before Mr. Raikes commenced his good work at Gloucester.

Sometime during the summer of 1860, the *Northern Christian Advocate*, published at Auburn, New York, said: "It is now definitely known that a Sabbath-school was originated in England as early as 1668, by the Rev. Joseph Alleine, author of the 'Alarm to the Unconverted.'" If this fact is "definitely known," it shows that a Sabbath-school existed in England one hundred and twelve years before Mr. Raikes instituted one at Gloucester.

But it is claimed that Sabbath-schools existed in America long before Raikes thought of introducing them in England. Many years ago the *Sabbath-School Times*, published in Philadelphia, speaking of the establishment of schools for Sabbatical instruction in America, said: "We have various accounts. Ellis, in his history of Roxbury, Mass., says of the Church, 'In 1674, 6th day, 11th month, is the first record of a Sabbath-school.'" Of this the historian says: "This day we restored a primitive practice for re-training up our youth. The male and female meet in separate places, and stay every Sabbath after the morning exercise, and the elders examine their remembrance in the Catechism and whatever else may convene." This was more than one hundred years before Raikes' experiment at Gloucester.

Pennsylvania claims to have had Sunday-schools in operation some thirty or forty years before they were established in Gloucester, England. "There is good evidence," says the author of the Teacher Taught, quoting from the *Sabbath Journal*, of March, 1835, "that a school of this description was known in Lancaster county, Pennsylvania, thirty or forty years before Raikes introduced the grand system in England." Of this school, the *Sabbath School Times* gave quite an extended account in 1860, in the course of which it said, that the "first Sabbath-school, of which we have any definite account, was established before the year 1747—between thirty and forty years previous to the time of Robert Raikes' first school—by a common school teacher named *Ludwig Hacker*, in Ephrata, Lancaster county, Pennsylvania. We have an *authentic* account of the regular continuance of the school for a period of between thirty and forty years, until the year 1777, or within four years of the time of Robert Raikes."

There are many other interesting facts in connection with the early establishment of schools for Sabbatical instruction in the United States, but I have not the space to refer to them now. It may be remarked, however, that religious bodies, as such, gave no patronage to Sabbath-schools in the United States until the beginning of the present century. In this matter the city of Pittsburgh took the lead. In the "Teacher Taught" it is stated that "it was not until 1809 that churches, or public bodies, began to institute or patronize Sabbath-schools in this country. The *first school* on this plan was probably one organized, August 22, 1809, in the city of Pittsburgh, Pa., which met for the first time on the first Sabbath of September, in the jury room of the Court House. It was regularly organized under an excellent constitution, and was attended by 240 children and adults. This school was formed without a knowledge of the mode of organization in Europe, and coincided in its principal features with the schools now established."

The sabbath schools established at an early date in this country, as well as those in Gloucester by Robert Raikes, did not have as much machinery about them as those of the present day, and taking into account what Raikes said in a letter to Colonel Townly, of Lancashire, on the 25th of November, 1783, as well as the reports we have received from those who labored in the work of Sabbatical instruction in this country in former times, it is questionable whether Sabbath-schools accomplish as much good now as they did when the mode of operating them was much more simple and less demonstrative.

Pittsburgh, June 28, 1880. EDUCATOR.

IN MEMORIAM.

PROF. J. W. SHOEMAKER.

THE educational ranks of Pennsylvania have lost a valuable man in the withdrawal therefrom by death of Jacob W. Shoemaker, founder and, up to the time of his death, president of the National School of Elocution and Oratory in Philadelphia. He died in Atchison, Kansas, on Saturday, May 15, 1880.

Prof. Shoemaker was born on the banks of Jacob's Creek, three miles from Mount Pleasant, in Westmoreland county, Pa., April 18, 1842. His father, the Rev. George Shoemaker, was a farmer; he was also a minister in the Dunkard Church, so-called, more commonly known in the parts where he labored as the Winebrennarian Church. He, however, with some others, separated from the Dunkards, and was instrumental in founding the church known as Brethren in Christ, in which he labored until his death in 1867, in the sixty-first year of his life. He was a man of ordinary education, but full of zeal and abun-

dant in good works, and preached not to empty pews in stately church edifices, but to large and eager audiences, assembled often in the spacious barns of farmers. The mother is still living, and resides in Armstrong county, as also a brother, Rev. Joshua Shoemaker. Another brother lives in Atchison, Kansas. These with a married sister constitute the surviving members of the father's family, of which Jacob was the youngest member.

Jacob W. Shoemaker spent his early boyhood partly in labor upon his father's farm, and partly in attendance at the district school. Evincing an aptitude in the use of the pen, his father paid the sum of fifty dollars for a course in penmanship, after which, at the age of fifteen, he made his first essay in teaching, giving private lessons in the art of penmanship. Being an excellent penman, and setting out in a community where young men seemed particularly fascinated with good handwriting, he had no difficulty in securing pupils, and such was his tact in teaching even at that early age, that he succeeded admirably.

He began teaching in the common schools when he was 17. In the spring of 1861 we find him a pupil in a Select School in West Newton, Westmoreland county, as also in the spring and summer of 1862. During the winter of '61 and '62, and the two following winters, he taught the school at Millgrove, near West Newton, boarding at his father's, who had moved to that vicinity. He showed unusual ability in the management of his school, gained the highest approbation and the enthusiastic admiration of his patrons, among whom is numbered the Hon. A. C. Hamilton, ex-member of the Pennsylvania Legislature. In fact, he soon took his place in the foremost ranks of the teachers of Westmoreland. He continued to give private lessons in penmanship, and also acquired considerable local reputation as a teacher of reading in the District Institute. Vacations were often spent in canvassing for books, in which those who ever knew him need not be told he was an adept. At West Newton, he was pupil first of the Rev, Henry Wallack, and afterwards of Prof. Geo. Richie, to the latter of whom he acted as assistant for some time. In '63 we find him a soldier in the Union army, having enlisted for three months, and taking part in the chase and capture of Gen. John H. Morgan, in Ohio.

In April, 1864, with a number of others who had been his fellow-students at West Newton, he entered the State Normal School at Millersville, and was put in the D Division. He remained at the Normal until July of that year, when he again joined the army as a private, enlisting for a hundred days. The soldier's manner of living told upon his health rather seriously, but fortunately his skill in penmanship secured him a position as private secretary to the General commanding his division, who had his headquarters at Martinsburg, Va.

At the expiration of his time of enlistment he returned to Millersville, where he remained a student until July of the following year. He is remembered at the Normal as a faithful, hard-working student, an active, energetic member of the literary society to which he belonged, a constant attendant upon all public devotional exercises of the school, even then an ardent worker in the cause of the Master, and making his voice heard in prayer and exhortation in the Sabbath evening prayer meeting.

In July, 1865, through recommendation of Dr. Wickersham, at that time Principal of the Millersville Normal School, he was employed as superintendent of Freedmen's Schools in Virginia. In this office he had general charge of the education of 18,000 negroes. He performed his work to the entire satisfaction of the Bureau, having rendered important service in organizing colored schools throughout the State. While engaged in this extremely delicate service, he seems to have won the esteem of the white people. He accepted no escort of soldiers, carried no deadly weapons. He mingled among the people freely, and nowhere sustained any injury. His manner disarmed them. But a year of such labor made large inroads upon his health, so that he was compelled to resign his position.

In the fall of 1866 he went to Philadelphia, located at 1223 Green street, and began work in a private capacity as a teacher of elocution and penmanship. In June, 1867, he married Rachel W. Hinkle, who was a member of the Faculty of the Normal School in Millersville while he was a student there. The marriage took place on the very day of his father's death, and he and his bride arrived at his father's home to assume the mourner's garb, and follow with sorrow the cold form of a beloved father to the grave.

From this time forward Prof. Shoemaker and his wife were associated in the work of instruction in elocution and oratory. The work grew upon them. Having with the utmost fortitude pushed themselves into recognition and notoriety, the demands upon their labors as teachers became greater every year. They gave private lessons to individuals and to classes; they gave instruction by lecture and practical drill in schools, academies, colleges, and theological seminaries. Ministers of the gospel, lawyers, teachers, ladies and gentlemen from various parts of the United States, amounting in all to more than three thousand, sought instruction and training from them. Their lectures and readings before teachers' institutes, lyceums, and promiscuous assembles, amounted to at least six hundred, involving a great deal of time and labor in their preparation. They succeeded by the merit and usefulness of their work in gaining the interest and countenance of some of the prominent citizens of Philadelphia. Made confident by their breadth of experience, encouraged by their success, as well as by the sympathy of educators and of the community in general, in September, 1873, they established their school on a permanent basis, with an extended course of study, associating with themselves other teachers in various departments of their work. On the 30th of March, 1875, a charter was granted to a board of trustees by the Commonwealth of Pennsylvania, constituting their school the National School of Elocution and Oratory. In the beginning of the present year the institution had reached that stage at which it was beginning to be a financial success, in fact was a success in every way. Prof. Shoemaker, however, whose health had been failing for several years, grew so much worse in the early spring as to be entirely incapacitated for work. How much he regretted the necessity imposed upon him of laying down his life work just when he was in the full flush of success!

His physician advised change of climate, and perfect rest. On April 15th, A. F. Martin, esq., of Atchison, an old schoolmate and friend, paid him a visit, and prevailed on him to accompany him to the West, with a view to trying the climate of Colorado, as a means of improving his health. Leaving on the 22d of April, they arrived at Atchison on the 25th. For several days he seemed to improve quite rapidly; but about the 8th of May he was taken with malarial fever, which by the 15th had done its fatal work. At 8:30

in the evening of that day, he peacefully and quietly breathed his life away. "He was conscious," his friend writes, "until his last breath, and seemed perfectly willing to go. His wife was telegraphed on Friday morning to come out, and started at once; but did not reach here until Sabbath night. The absence of his wife and children was the only thing he seemed to regret, and his last words were, "Tell them that, next to heaven, I love them best. All is well." On the following Saturday his remains were committed to the tomb in Philadelphia.

Prof. Shoemaker was a hard-working man. Often the small hours of the night found him busy at his work, and maybe his death was hastened by his incessant toil. He was a good teacher. He was one in a thousand in vivacity and enthusiasm. His whole soul entered into his work, and such was his magetism that he filled his pupils with an earnest eagerness to excel. Brimfull of kindness, he took every one as it were into wide open arms of friendship and brotherly feeling, and showed in every way an intense interest in the welfare of his pupils. This spirit, a model of its kind, was a grand educational influence that accompanied his work as Institute lecturer. Many teachers went home from Institutes where he had lectured more deeply imbued with the true teacher spirit than they had ever been.

He had thoroughly mastered his specialty of Elocution and Oratory, and had studied out most excellent methods of presenting the subject itself, and also of directing others in the use of them. Thousands of teachers all over the State have been largely benefited by his efforts in instructing them at their County Institutes. He seemed to be in his element among teachers. Genial, interesting, instructive, inspiring, he always won their esteem and respect, received their closest attention and succeeded in imparting to them much valuable knowledge. He was very social. Gifted with fine conversational powers, provided with a large fund of anecdote, and characterized by great good humor, his society had a more than ordinary charm. He had excellent executive ability. At seventeen he showed that he could successfully manage an unusually rough set of school-boys, and in his maturer years he was quite as successful in managing men. He knew all the gentler approaches to the human heart, and was skillful in moulding will and sentiment to his purposes. In him mildness combined with firmness, and these gave to discipline an irresistible power. He had considerable literary ability, as manifested in his lectures of a literary character delivered before large and select audiences in Philadelphia and elsewhere, also in that valuable compilation, "Best Thoughts from Best Authors" and in his "Manual of Elocution." Above all he was a Christian, ever putting forth his wonted energy and activity in the cause of Christ. His Sabbaths were as full of Christian service as his week days were of secular labor. He was a member of the Board of the Young Men's Christian Association, carried on a mission Sunday-school, took great interest in Sabbath-school work in general. He was a member of the Central Congregational church, Philadelphia, in which he organized and taught a Union Bible Class of fifty members. He carried his religion into all his work; in fact, it was the ruling principle of his life.

It was his faith that inspired all his labors, made of him a good and faithful servant, one who put every talent to usury and who, now received on high, has been greeted there with the plaudit, "Well done."

A. R. Byerly.

OVER THE SEA.

LETTERS FROM THE EDITOR.—NO. XXIII.

SALZBURG—VIENNA.

WE enjoyed ourselves so much in Munich, had seen so many things that interested us, that we left the city with regret. Our route was by Rosenheim to Salzburg, and as we had previously traveled from Rosenheim to Munich, this part of the ride had little to attract our attention. For the most part the country is a plain, with a thin soil, poor crops, and a hard-worked, stolid-looking peasantry. After leaving Rosenheim the road crosses the Inn, and the scenery soon becomes more varied. The line runs along the south side of lake Chiemsee with its well-known islands Herrenwörth and Frauenwörth, the former once the seat of a monastery and the latter of a nunnery, and its framework of picturesque mountains. Further on we pass through some fine mountain scenery, notice several beautiful little lakes, and catch a view now and then of a ruined castle or the grand chateau of some nobleman. Crossing the Salzach we are in Salzburg. We drove through the new part of the city, which is built in modern style with fine buildings and broad straight streets, to our hotel in the old town, where everything has the look of an age long past. Our room was in a massive stone building, with a stone archway as an entrance, a stone staircase, and stone floors. It might have been a fortress in the good old days; it certainly is now as cold and gloomy as a prison. Near by it, however, was the rapid river, the most characteristic shops, and all that is historically most interesting in Salzburg.

Our first walk took us to the Residenz-Platz. About it are located the government buildings; the palace, a large but gloomy-looking structure erected in 1592; the *Hauptwache*, or Guard-House, and the Cathedral nearly three hundred years old. In the centre is the *Hofbrunnen*, a massive fountain, with hippopotami and other colossal figures each hewn out of a single block of marble. A Triton on the top, eight feet high, spurts the water out of a horn. Adjacent to the Residenz-Platz is the Mozart-Platz, adorned with a statue in bronze of the great composer for whom it was named. Elsewhere in the city is the house in which Mozart was born, the house in which he lived, and a school of music with a room containing many of his manuscripts and the piano which he used. In the same locality is the Capital-Platz, adorned with a marble horse trough, said to be the

handsomest drinking-place for horses in the world, and overlooked by the imposing Archbishop's Palace. A few steps further bring us to the church and burial ground of St. Peter. The church is an old Romanesque edifice dating back to 1127. In its several chapels are monuments, tombstones and memorial tablets to a number of distinguished persons, among them one to the Baroness Sonnenburg, Mozart's sister. The burial ground is very old, having been consecrated by St. Rupert about 582. Some of the vaults are hewn out of the solid, native rock, and are connected with chapels, the base of the mountain, which is here almost perpendicular, being cut down for the purpose.

The Mönchsberg, a mountain something over two thousand feet high, stands south of the town. Near the summit rises the fortress of Hohen-Salzburg. A steep roadway leads to it from the Capital-Platz. We walked up to the fortress, entering the court-yard by a steep flight of steps. Here a company of soldiers were drilling, and in all directions appearances looked warlike. An intelligent young soldier, who seemed to be detailed for the purpose, took us through the buildings. Hohen-Salzburg has been a fortress for nearly a thousand years, and it has been increased and strengthened until now it compares in the size of its buildings and in historic interest with the great castles of Stirling, Edinburgh and Heidelberg. We followed our guide from room to room, up and down stairways, through halls and corridors, along underground passages, until we became perfectly bewildered and scarcely knew our right hand from our left. We remember that the castle-chapel contains the statues of the Twelve Apostles in red marble and is adorned with reliefs; that the Fürstenzimmer is fitted up and furnished in the quaintest style of the sixteenth century, just as it was in the days of the bold but crafty Archbishop Leonhard, who built it; that the Rittensaal is still graced, if not warmed, by a fine Gothic stove some centuries old; and that in one of the rooms there are the marks of a cannon ball said to have been fired from Capuzinerberg, a mountain which rises opposite, on the north side of the city, and in another the fragments of the rack and other instruments of torture used in the hard old times to extort confessions from unwilling victims. Finally, we found our way to the Folter-Thurm, and at once had before us a magnificent prospect. In the plain below was the river, crossed by several bridges, with the city on both sides of it. The valley above, below and around the city is rich in gardens, orchards, groves, villas and country-seats; and further off several ranges of mountains complete the picture.

From Salzburg to Vienna, the time by rail is from eight to ten hours. The country along the line is generally good farming land and well cultivated. Women work in the fields everywhere in much larger numbers than men. We saw them cradling, mowing, plowing, pitching hay, standing guard at railroad crossings, etc. The houses and barns of the farmers in almost all cases are connected together, constituting one building, and with their attachments are arranged around the sides of a square or quadrangular enclosure or court, in which the stock, poultry, etc., belonging to the place are confined. This manner of building probably arose from the necessity which existed in by-gone ages of protecting personal property. The Germanic tribes in the time of Cæsar's campaigns encamped in squares, placing their "impedimenta" and their women and children in the space thus enclosed. It is notable also that these sets of buildings are in most cases in clusters of two, three, or four, forming little villages.

The population must be intensely Catholic, for multitudes of shrines are to be seen on all sides of the roads, in the fields, and near the stations. Not unfrequently there are as many as four or five, sheltered by little houses, in a single field a few acres in size. They represent Christ on the cross, Christ and the Virgin, the Virgin and Child, or some saint or martyr, and are made of marble, wood, plaster, etc. Many of them are exceedingly rude, and exhibit a wretched want of good taste, whatever they may indicate as to religious sentiment. As there are no fences, flocks feeding in the fields are watched by old men, women and dogs. Now and then you see cows, sheep and goats tied with a tether. The plowing for the most part seems to be done by oxen and cows, the team consisting in many cases of a single animal. The oxen are hitched up with traces; the pressure in pulling rests upon the back of the neck, and not as with us against the shoulders. Not a mower was seen on this side, or indeed at any time in either Austria or Germany; and it is not likely such machines will ever be used to any great extent, as long as the land continues to be cut up into such little fields and patches as is the case at the present time. A few threshing machines are in use, but in our whole tour on the Continent we saw only a single one at work.

The scenery between Salzburg and Vienna is not very remarkable, although there are some fine views. Soon after leaving Salz-

burg the line skirts the beautiful little lake of Seekirchen; to the right near Schwavenstadt the Alps can be seen in all their grandeur; at Linz the road enters the valley of the Danube and follows it for a long distance, but the river itself is scarcely seen until you approach Melk, where a beautiful view of it is obtained; and just out of Vienna, as you pass through the Wiener Wald, or Forest of Vienna, the scenery is exceedingly wild and picturesque. The towns of interest are Wels, which although known to the Romans under the name of Ovilabis, seems to be built up mainly in modern style; Linz, with its formidable looking forts; Enus, finely situated with its old castle, its lofty watch-tower, and its fortifications constructed with the money paid by England as a ransom for the release of Richard Coeur de Lion; Melk, on the banks of the Danube, with a magnificent view of the river, and St. Poelten, well-built and flourishing. All the way the interest of the curious traveler is kept alive by the ruined castles, the châteaus of the nobility, and the churches and abbeys, that seem to crown almost every hill, and to occupy about all the eligible sites throughout the whole country. As you approach within a few miles of Vienna the landscape on all sides is enriched by grand châteaus, beautiful villas, parks and gardens. Pleased with this picture, we entered the city and drove at once to the hotel Metropole, which was to be our stopping-place.

The charges at the leading hotels in Vienna are high, but the general accommodations are good, and the cuisine admirable. The Metropole is an immense establishment, situated in Franz Joseph Quai, fronting the Danube Canal, the southern arm of the river, and is managed by an army of officers and servants. The court is covered, lighted from above, and tastefully fitted up as a conversation and reading room. Immediately around it the porticoes or balconies are supplied with tables, and the guests may eat their meals in the midst of shrubbery and flowers, and where they may enjoy the play of fountains and the singing of birds.

Vienna consists of the old city, bounded by the Ring-Strasse and the Franz-Joseph Quai; and the new city, made up of numerous outlying suburbs. The population of the whole is not less than a million. The old city is characterized by streets without sidewalks, and so crooked that no stranger can possibly find his way through them, and sometimes so narrow that a person with outstretched arms may touch the buildings on either side; by great numbers of Durchhäuser, or arched passages, that run through and between the houses from one street to another; by tall, gloomy-looking buildings, centuries old, and by a trade that constantly fills the streets, stores and shops with a busy throng of people. The new city has open squares, pleasant gardens, broad, straight streets, splendid stores, and great blocks of buildings in Parisian style.

The Romans built a fortress where Vienna now stands in the first century of the Christian era, and the Emperor Marcus Aurelius died here in the year 180. Since that time, its eventful history embraces its conquest by Charlemagne in 791, its overthrow by Rudolph of Hapsburg in 1276, and its selection as the seat of the Hapsburg dynasty, its besiegement by the Turks in 1683, and their defeat by the famous John Sobieski, king of Poland, its possession by the French after the battles of Austerlitz and Wagram in 1805, and its threatened capture by the Russians in 1866. The double lines of fortifications which Vienna once possessed have been removed, and in place of walls, fosse and glacis, which up to 1858 enclosed the old city, there is the splendid Ring-Stasse, averaging fifty-five yards in width, with beautiful shaded walks in the centre, bordered by fine parks and gardens, and overlooked by some of the most magnificent buildings in Europe.

We began our visits in the Austrian capital by going to the new Museum of Art and Industry. The building is a handsome structure on the Steuben-Ring. Entering, you find yourself in a quadrangle surrounded by a double row of columns, and with appropriate decorations. The exhibition rooms are on either side of this quadrangle, and a broad stairway ascends from it to the rooms on the second story. The institution is planned on the model of the South Kensington Museum at London, and is a school of art and industry as well as a collection. We were particularly struck with the classification and management of the objects in the different rooms. The first room we entered contained specimens of goldsmith's work, including representative specimens in great varieties of this kind of work from different nations, both ancient and modern. Another room contained specimens of the pottery of all nations and ages. Room number three was filled with articles made of glass and ivory. Number four was devoted to specimens of weaving, needle work, and furniture. In other rooms were articles of tin, iron, brass, leather work, book binding,

printing, architectural fragments, ornaments, vases, etc. A series of rooms is set apart for a permanent exhibition of the art industry of the present day, and any one is allowed space for specimens of his own work, or of the work of his shop or factory. The institution possesses many casts of the best works of the old masters, and a flourishing school of design is conducted in connection with it.

From the museum we went to the Polytechnic School, which is only a short distance away. This is one of the most celebrated schools of the kind in Europe, having some fifty professors and fifteen hundred students. The buildings are large but plain. The lecture-rooms are of good size and well supplied with blackboards, maps, charts, etc. There is a fine collection of philosophical apparatus, and suites of rooms are fitted up for laboratories, designing, modeling, and the manufacture of mechanical and mathematical instruments. The collections in natural science are large and well arranged. But the most striking feature of the school is its Technological Museum, with 60,000 specimens of manufactures in the various stages of production, from the raw material to the finished articles. Of raw materials there are five or six thousand different kinds, embracing the principal products of the earth in all lands that have been converted to the use of man; starting with these, the processes of working them or fitting them for the several uses, the tools used and the results effected, are shown with a wealth of illustration unequalled by any other similar institution in Europe. Many of the principal industries, such as the making of hats, shoes, cotton and woolen goods, silk, etc., are followed up from beginning to end with wonderful minuteness. The industries exemplified are not Austrian alone; all modern civilized nations are represented, and many curious productions have been brought together from nations less advanced. The United States has not been overlooked, and we were pleased to see among articles from America, saws and other tools from Disston & Sons, Philadelphia.

We walked along the Ring-Strasse all around the inner city, a distance of two miles. As already stated, it occupies the site of the old ramparts, and, handsome now, it is destined to be one of the most splendid streets in the world. From our hotel the walk was first down the Quai to the Aspern bridge, and then turning sharply we noticed one of the old city gates, Franz Joseph Thor, on the right hand, and on the left the large Custom House. The street now becomes very broad, and is divided into two avenues, something like the Unter den Linden in Berlin, by a promenade bordered by grass plots, and shaded with trees. We now pass the Museum of Art and Industry, and look over into the beautiful city park crowded with visitors, on the one side, and, on the other, the imposing palaces of the Duke Augustus of Coburg, and the Archbishop William. Further on, we stop to look at the handsome facade of the new gymnasium, and at the fine equestrian statue of Prince Schwarzenberg, which stands in the Schwarzenberg Platz. We now reach the finest part of the street, and pass in rapid succession the magnificent new Opera House; the palace of the Archduke Albert; several fine palaces belonging to private citizens; the Hofburg or Imperial Palace, with the apartments of the royal family; the Hofgarten, the Burg-Platz and the Folksgarten, forming together a fine park in front of the palace, entered by the Burg-Thor, with equestrian statues of the Archduke Charles, Prince Eugene of Savoy, and Francis I., and drives, walks, fountains, shrubbery and fences; an open space in which immense buildings were being erected for a museum; the Houses of Parliament, the City Hall, and the University, all on one square; and finally, a succession of handsome private houses and shops, including the Bourse, where we saw an Austrian stock exchange in full operation, equal in excitement and noise to that at New York or Chicago.

We saw the outside of a number of churches at Vienna, but we did not enter any of them. We, however, ascended the tower of St. Stephen's, and enjoyed the extensive view from the top. The tower is four hundred and fifty-three feet high, and, with a glass, from the top we can not only see the city, but have a good view of the whole plain on which it is situated, the Danube for many miles of its course, and the distant mountains.

We drove out Prater Strasse, the Corso of Vienna, and on to the Danube. The river at the point we touched is crossed by a fine iron bridge. It is about as wide as the Susquehanna at Harrisburg, and the current is very rapid. The great Exposition of 1873 was held in the north part of the Prater, and we visited what was left of the buildings. There were many evidences of the exhibition still remaining in the neighborhood, in the shape of temporary structures used for saloons, shops, shows, etc. The grounds, too, remained much the same, although most the buildings had been removed. They had,

like ourselves, a Machinery Hall, but all that remained of it was occupied as a beer saloon. The central part of the Main Building with the dome is well preserved, and is used for concerts and theatrical performances. We have never visited the grounds of the Exposition of 1876 at Philadelphia since it closed, without the feeling that we had lost something; a feeling akin to that one has in attending the funeral of a friend. A similar feeling of melancholy came on us as we gazed on what remained of the great Austrian Exposition, and we returned to our hotel sad and thoughtful.

OFFICIAL DEPARTMENT.

DEPARTMENT OF PUBLIC INSTRUCTION,
HARRISBURG, August, 1880.

ALL OUTSTANDING SCHOOL WARRANTS TO BE PAID.

DEPARTMENT OF PUBLIC INSTRUCTION,
HARRISBURG, July 12th, 1880.

TO BOARDS OF SCHOOL DIRECTORS:

The State Treasurer, Hon. Samuel Butler, authorizes me to give notice that all outstanding Warrants issued to School Districts for the appropriation of 1879, numbered up to 1,500, will be paid as presented during the current month; and that the balance of these Warrants, numbered from 1,500 upwards, remaining unpaid at the end of July, *will be paid during August.*

I congratulate school directors and all interested in public schools, that the long delay in the payment of the money due from the State is thus happily ended.

J. P. WICKERSHAM,
Supt. Public Instruction.

[The above important announcement should have been made in the Official Department of *The Journal* for July, but was received by the Business Editor at the last moment, after the forms had been made ready for press, and was therefore unavoidably crowded out of its proper position. It was, however, placed immediately after the music page, and so indexed in the table of contents on title-page that it could not be overlooked by the average reader. A special circular was also sent out from the Department, which has been generally noticed by the newspaper press of the State, so that, of the many thousands who are interested in the payment of this addition to the district school fund, none should now be ignorant of the present satisfactory status of the State Appropriation for 1879.—ED.]

ELECTION OF SUPERINTENDENT.

PROF. D. B. BRUNNER, formerly County Superintendent of Berks county, has been elected Superintendent of the public schools of the city of Reading, to fill the unexpired term of Prof. R. K Buehrle, recently elected Superintendent at Lancaster, Pa.

PRINCIPAL OF NORMAL SCHOOL.

PROF. D. C. THOMAS, of Union City, Erie county, has been elected to the principalship of the State Normal School located at Mansfield, Tioga county.

PERMANENT CERTIFICATES GRANTED.

No.	NAME.	RESIDENCE.
2733	M. A. Witwer....	Lancaster, Pa.
2734	M. A. Dougherty..	" "
2735	Emma Powers....	" "
2736	Emily Suydam....	" "
2737	Jno. K. Woerth...	" "
2738	J. B. Siroh.....	Manheim, Lancaster Co.
2739	John F. Ruth....	Rothsville, "
2740	A. E. Frost.....	Pittsburgh, Pa.
2741	Adam Minnich...	North Heidelb'g, Berks Co.
2742	C. A. Gilbert.....	Reidsburg, Clarion co.
2743	Gabriel Moyer....	Derry Church, Dauphin co.
2744	Mamie K. Major.	Cressona, Schuylkill co.
2745	S. Jennie Haines..	" "
2746	M. M. Hammekin	Pottsville, "
2747	T. P. Neff.....	Womelsdorf, Berks co.
2748	J. J. Allebaugh...	McClellantown, Fayette co.
2749	Harry T. Mullin..	Schellsburg, Bedford co.
2750	G D. Cressman..	Cumberland Vy., "
2751	Amanda Landes..	Lancaster, Lancaster co.
2752	Regina A. Myers.	Mt. Joy, "
2753	Hattie S. Leche..	Strasburg, "
2754	Lizzie A. Edwards	Pittsburgh, Pa.
2755	E. A. Wade.....	"
2756	Miss McGlaughlin	"
2757	A. V. Hunter.....	"
2758	Benj. W. Reep...	Fallsington, Bucks co.
2759	Oswin C. Keiper.	Spinnerstown, "
2760	A. B. Sellers.....	New Hope, "
2761	D. A. Hamaker..	Shiremanstown, Cumb'd co.
2762	A. S. Quickel..	Camp Hill, "
2763	M.E.C. Lamberton	Carlisle, "
2764	M. B. Brown. ...	Newville, "
2765	A. James Gayman.	Doylestown, Bucks co.
2766	Mary Pollock....	Easton, Northampton co.
2767	L. M. Townsend..	" "
2768	Jennie Kase.....	" "
2769	L. S. Cottingham.	" "
2770	Mary H. Shay....	Pottsville, Schuylkill co.

ECHO.—Echo was a beautiful nymph, fond of the woods and hills, where she devoted herself to woodland sports. She was a favorite of Diana, and attended her in the chase. But Echo had one failing; she was fond of talking, and, whether in chat or argument, would have the last word. Juno, having discovered that some deception had been practiced by Echo, passed sentence upon her in these words: "You shall forfeit the use of that tongue with which you have cheated me, except for the one purpose you are so fond of—*reply*. You shall still have the last word, but no power to speak first." This nymph saw Narcissus, a beautiful youth, as he pursued the chase upon the mountains. How she longed to address him in the softest accents, and win him to conversation, but it was not in her power. She waited with impatience for him to speak first, and had her answer ready. One day, the youth, being separated from his companions, shouted aloud, "Who's here?" Echo replied, "Here." Narcissus, looking around but seeing no one, called

OFT IN THE STILLY NIGHT.

STEVENSON.
MOORE'S MELODIES.

Tenderly.
p
1. Oft in the still - y night, ere slum - ber's chain hath bound me,
2. When I re - mem - ber all the friends so link'd to - geth - er
D.C. Thus, in the still - y night, ere slum - ber's chain hath bound me,
cres.
dim.
Fine.
Fond mem' - ry brings the light of oth - er days a - round me,—
I've seen a - round me fall, like leaves in win - try wea - ther,
Sad mem' - ry brings the light of oth - er days a - round me.
The smiles, the tears of childhood's years, the words of love then spok - en, The
I feel like one who treads a - lone some ban - quet hall de - sert - ed, Whose
D.C.
eyes that shone, now dimm'd and gone, the cheer - ful hearts now bro - ken:
lights are fled, whose gar - lands dead, and all but him de - part - ed.

out, "Come." Echo answered, "Come." As no one came, Narcissus called again, "Why do you shun me?" Echo asked the same question. "Let us join one another," said the youth. The maid answered with all her heart in the same words, and hastened to the spot. He started back, exclaiming, "Hands off? I would rather die than you should have me." "Have me," said she, but it was all in vain. He left her, and she went to hide her blushes in the recesses of the woods. From that time forth she lived in caves and among mountain cliffs. Her form faded with grief, till, at last, all her flesh had shrunk away, her bones had changed into rocks, and there was nothing left of her but her voice. With that she is still ready to reply to any one who calls her, and always keeps up her old habit of having the last word.—*Age of Fable.*

There is something in the very shape of harps, as though they had been made by music.—*Bailey*